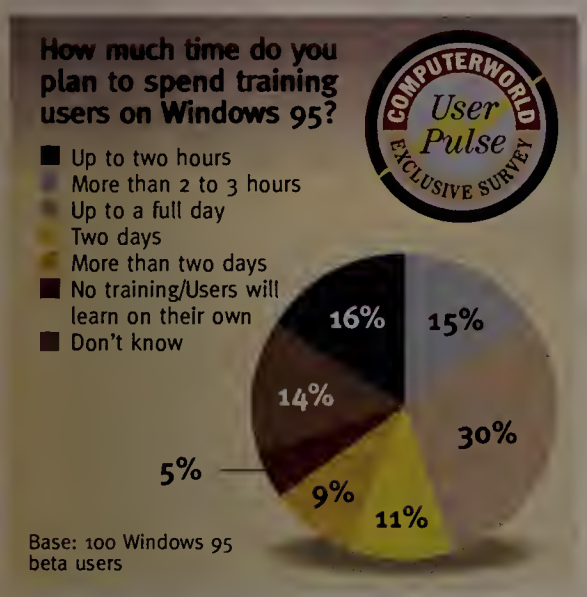
The Newspaper of Information Systems Management
August 7, 1995, Vol. 29, No. 32, 156 Pages, $6/Copy, $48/Year

COMPUTERWORLD



What price, Win 95?

User migration cost estimates run the gamut from $500 to $1,000+ per PC

By Stuart J. Johnston

Most corporate users gearing up for Windows 95 plan to spend less than $1,000 per machine to get their PCs in shape, according to an exclusive *Computerworld* survey.

When it comes to trying to put a nice round figure on upgrade costs, however, user and analyst estimates are all over the map. That goes for estimates of training time, too.

Computerworld surveyed 100 information systems decision-makers who have participated in the Microsoft Corp. Windows 95 beta or Preview programs. The survey found that 49% expect to spend less than $500 per PC to upgrade hardware and software. An additional 20% expect to pay between $500 and $1,000, and 16% expect to pay more than $1,000. The other 15% don't know how much they will spend.

Desktop watch

- IBM explains away the OS/2 uproar. **See page 4.**
- Stability and compatibility are top IS concerns with Win 95. **See page 109.**

Apples and oranges

Part of the reason for the disparity is that companies have all kinds of machines, from 286-based units to Intel Corp. Pentium-based units. The cost of upgrading will depend on what percentage of the machines are newer technology, how many will be upgraded and what upgrade path will be taken. For example, companies may opt to buy new systems rather than upgrade old ones.

Microsoft recommends a minimum platform of a 486-based box equipped with at least

Windows 95, *page 109*

AT&T opens up WAN bandwidth to larger apps

By Bob Wallace

AT&T Corp. has confirmed that it will soon announce Integrated Services Digital Network Primary Rate Interface capabilities in its nationwide network, *Computerworld* has learned. This will enable PRI users to free up sorely needed wide-area network capacity for big bandwidth applications.

According to a source close to the company, these capabilities will be provided via user-to-user signaling. That technology will let users shift remote LAN access/authentication from a data transport channel that is in heavy demand to a lightly used signaling channel.

Much attention has been given to ISDN Basic Rate Interface, which is sold by local carriers and is used to give small sites and telecommut-

AT&T, *page 109*

The planned features for AT&T's ISDN PRI service will aid in remote LAN access authentication and offer the following benefits:

- An **EXTRA** 64K bit/sec. B channel for data transmission made available
- A **CHEAPER PRICE** when done on the D signaling channel, not a B channel
- **SPEEDIER** authentication
- **MORE SECURITY** on the D channel

Microsoft/DEC deal to buoy NT, Alpha

By Michael Goldberg and Jean S. Bozman

Moving to bolster its reputation at the higher reaches of the enterprise, Microsoft Corp. last week teamed up with Digital Equipment Corp. to build Windows NT into a standard for server operating systems.

Users generally hailed the deal as a way for Microsoft to ratchet itself upward from the desktop by leveraging Digital's resources in corporate-level desktop integration, service and support.

For Digital, the deeper partnership with the software giant should boost the fortunes of its Alpha systems, providing the company with a more solid footing on its comeback trail, industry analysts said.

"They've got a real partnership with the behemoth of the PC industry, and the industry is increasingly PC-oriented," said Jonathan Eunice, research director at Illuminata, a Hollis, N.H., research firm.

In exchange for paying $50 million to $100 million to train 1,500 Digital staffers in Microsoft support, the Redmond, Wash.-based vendor gets to use Digital's clus-

Windows NT, *page 14*

WHAT? RE-ENGINEERING THAT WORKS?

FLUSHED with SUCCESS


Pete Rogers of American Standard reshapes the business

BRIAN SMALE

BY JOSEPH MAGLITTA

Five years ago, American Standard, Inc. was in danger of going down the drain. Today, thanks to massive re-engineering, the world's largest plumbing supplier is overflowing with payoffs.

"Most companies blink. These guys didn't," says Michael Hammer, president of Hammer and Co., a Cambridge, Mass., re-engineering training firm. "Few companies are undertaking as broad and deep an effort."

Since emerging from a 1989 leveraged buyout $3.1 billion in debt, the Piscataway, N.J., maker of toilets, air conditioners and bus and truck brakes has tackled more than 75 major re-engineering efforts, according to company re-engineering czar Gus Vess.

Blending widespread redesign with "demand flow technology" — a companywide cost reduction and efficiency program — the $4.5 billion manufacturer has joined the rarest of groups: big companies that successfully transform themselves without major layoffs.

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Newspaper

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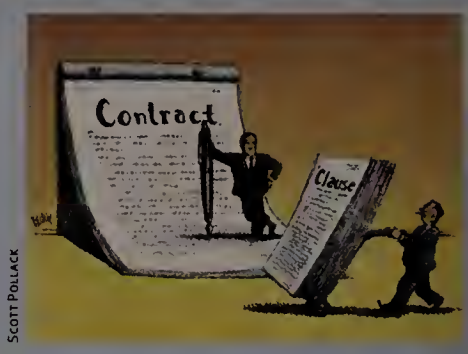
JANELL GENOVESE

Would you believe a *swamp bacterium that revolutionizes optical storage? The biological and computing sciences are merging like never before.* **In Depth, Page 83**

Choice Cuts

54%

of IS staffs say their companies do nothing to minimize turnover, a recent Computerworld *survey says. So why DO employees leave? Boredom, money and stress are top complaints.* **Careers, Page 88**



SCOTT POLLACK

Employee retraining. *Disaster recovery. Pay-as-you-can plans. Outsourcing contracts are taking on a differnet look. It's an opportunity for IS to get the upper hand.* **Management, Page 69**

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What's ahead for OS/2?

IBM shifts focus back to server rather than battle Microsoft for desktop supremacy

By Lisa Picarille

In response to feedback from its customers, IBM seems to be toning down OS/2 Warp's snazzy consumer image for a more corporate look so as not to scare off large customers.

The change in strategy came to light when Chairman Louis V. Gerstner Jr. last week addressed a group of securities analysts and said IBM is focusing its OS/2 efforts on "large-enterprise, real serious, line-of-business applications."

Industry watchers quickly interpreted Gerstner's remarks as a concession of the desktop operating systems environment to Microsoft Corp. and a clear shift in IBM's OS/2 strategy.



IBM Chairman Louis V. Gerstner, responding to a question during a meeting last Monday with securities analysts in New York:

"Stand-alone desktops are not our primary target. There are people out there who love OS/2 on that [kind of] desktop, but our focus is on enterprise customers and real serious business uses."

Gerstner in a memo issued to IBM sales managers the following day:

"The consumer and stand-alone desktop markets for OS/2 are growing but are secondary to our emphasis on robust line-of-business client/server applications for our enterprise customers."

In defense

Gerstner responded immediately by firing off a memo to more than 3,500 IBM sales representatives that insisted that large enterprise customers, not stand-alone desktop users, have always been OS/2's primary target. And in a letter to *The New York Times*, he called the stand-alone OS/2 desktop "secondary" to the enterprise strategy.

"He must have forgotten about IBM's 'Better Windows than Windows' promotion," said Jeff Tarter, editor of "Soft Letter," an industry newsletter in Watertown, Mass. Tarter was referring to IBM's ontime vow to provide users with a better Windows implementation under OS/2 than they would get with straight Windows.

Some analysts said they see IBM's move to refocus OS/2 back on the server as a direct result of the impending threat of Microsoft's forthcoming Windows 95.

"IBM got outmarketed by Microsoft," said Frank Dzubeck, president of Communications Network Architects, Inc. "OS/2 hasn't found its niche yet, which is likely to be distributed computing."

Loss of faith

But some said it was "IBM's OS/2 strategy du jour" that scared off potential software developers and confused big business customers.

"A lot of [high-end] customers lost faith in IBM when it repositioned OS/2 as a low-end product," said Tarter, referring to IBM's push behind Warp, its most publicized version of OS/2.

For example, four users at large OS/2 sites at Fortune 1,000 companies, who declined to be identified, said their corporations were thinking about dropping OS/2 in favor of Windows 95, Windows NT or a combination of the two. However, most said no decision had been made.

And IBM is even losing a little ground in markets where it has a strong following, such as the banking industry. Analysts estimate that 30 of the Top 50 U.S. banks use OS/2 somewhere in their organizations but that Windows NT is starting to make inroads at banks such as Bank South Corp. located in Atlanta.

IBM claims its primary focus was never the consumer market anyway, but that small office and home users liked OS/2 Warp.

"We felt that we had to put more of a fashion spin on Warp," said Steve Mills, general manager of the Software Solutions division at IBM. "That certainly got OS/2 a lot more attention, but our enterprise customers were quick to remind us that we shouldn't lose our way."

One longtime OS/2 user at a Fortune 100 bank said, "We are a big OS/2 shop, and the first time I saw the Warp ads with the nuns and IBM's corporate sponsorship of the OS/2 Warp Fiesta Bowl, I got a little nervous about what direction IBM was taking OS/2 [in]."

David Card, an analyst at International Data Corp. in Mountain View, Calif., predicted that OS/2's push into the consumer market may ultimately cost it the high-end server space it once owned. "OS/2 was in the catbird seat; now NT is ruling," he said.

Yet some industry watchers didn't see Gerstner's comments as an about-face on OS/2's positioning at all. And John W. Thompson, general manager at IBM's market and solution developer program, insisted, "We have not changed anything — our marketing and development budgets for OS/2 or our investment."

Senior editor Craig Stedman contributed to this story.

Enterprise users of OS/2 won't hear of IBM abandoning the operating system

By Craig Stedman

Even if Windows 95 and Windows NT combine to stomp the competition in the desktop and server markets, IBM has good reason not to pull the plug on OS/2.

Its most loyal customers are demanding the oft-dismissed operating system be kept from death's door.

While some large OS/2 users have started to evaluate Microsoft Corp.'s tandem team of Windows operating systems as future platforms [CW, Jan. 23], a half-dozen users interviewed last week said they remain devoted to OS/2. And because the companies with heavy investments in OS/2 tend to be large, mainframe-oriented businesses that run mission-critical applications on the platform, IBM's hands are pretty tied when it comes to supporting its desktop rival to Windows.



IBM's Steve Mills: *OS/2 'is not the kind of thing we're going to walk away from'*

"We'd be furious" if IBM stopped developing OS/2, said Joe Waynick, assistant vice president of technical support at Union Bank in Monterey Park, Calif. "But I don't see that happening, not by a long shot. They're not going to pull the plug on 9 million users."

Union Bank, which still runs most applications on mainframes, is standardizing on OS/2 as its LAN and application server, Waynick said. All of its Novell, Inc. NetWare servers are being replaced with OS/2-based boxes. Most of the bank's 4,500 desktop PCs run Windows, but a branch automation projeet that is under way uses OS/2 for both desktops and servers, he added.



Guide International's Linda Mainord: *'There's a lot of commitment to OS/2' at Guide*

Rumor mill

With the official release of Windows 95 two weeks away, the fate of OS/2 has become grist for the speculation mill. IBM Chairman Louis V. Gerstner Jr.'s statement last week that OS/2's main focus is on "serious business uses" (see related story at left) was seen partly as an attempt to salvage a key niche for the operating system no matter what happens in the general desktop market.

Large corporate customers are counting on IBM to do just that.

"There's a lot of commitment to OS/2 in the Guide organization, and we're the ones with the big bucks," said Linda Mainord, president of Guide International Corp., one of two mainframe-derived IBM user groups.

Steve Mills, general manager of IBM's Software Solutions division, agreed that most of OS/2's success comes in "large accounts and classical top-down, decision-making environments." Those customers typeally buy "a lot more than just a desktop operating system," he said. "OS/2 is not the kind of thing we're going to walk away from because it impacts our total business."

Robert Djurdjevic, an analyst at Annex Research in Phoenix, estimated that OS/2's market share is 40% or more in the traditional corporate data processing environments that are IBM's biggest customers. That compares with an overall market share of less than 10% for the IBM operating system, he said.

"IBM is worried that if they killed OS/2, there would be repercussions in other areas," said Scott Winkler, an analyst at Gartner Group, Inc. in Stamford, Conn. Abandoning OS/2 would be "much harder politically" with customers now that IBM is solidly profitable again, he added.

"That would just be slitting their own throats," agreed Cary Serif, manager of applied technologies at Huntington Bancshares, Inc. in Columbus, Ohio. But IBM shows no sign of wavering on OS/2, he said.

IBM'S PowerPC is a screamer, but it lacks some ingredients. See page 40.

Blue about OS/2

What is your primary server operating system?

	NetWare	OS/2 LAN Server	Windows NT	Other
Base: 200 Fortune 1,000 companies	58%	7%	10%	25%
Base: 53 IBM users from the 200 surveyed	60%	15%	8%	17%

What is your primary desktop operating system?

	Windows/DOS	OS/2	Windows NT	Other
Base: 200 Fortune 1,000 companies	80%	4%	4%	12%
Base: 53 IBM users from the 200 surveyed	80%	12%	2%	6%

Source: Dataquest, Inc., San Jose, Calif.



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3Com faces user angst

Customers frown on Chipcom deal; Cabletron drops own bid in order to pursue customer base

By Bob Wallace and Laura DiDio

3Com Corp.'s plan to acquire switching hub vendor Chipcom Corp. for $775 million garnered mainly annoyed and befuddled reactions last week from users of both vendors' products.

Internetworking rival Cabletron Systems, Inc. hopes to capitalize on those feelings by dropping plans to acquire Chipcom itself, opting instead to launch an aggressive cash trade-in program for Chipcom users.

"The reason we were interested in Chipcom was for its customer base, not its technology," said Cabletron Chief Executive Officer Bob Levine. The vendor will give details of the program this week.

The acquisition of Chipcom would make 3Com a $1.6 billion company, second only to market leader Cisco Systems, Inc. in the frenzied and crowded internetworking industry. But details of the plan raised red flags among some loyal and long-standing 3Com customers.

"I don't see any benefit for users from 3Com acquiring Chipcom," said Steve Lopez, information systems manager at the National Board of Medical Examiners in Philadelphia. "Chipcom products can't hold a candle to 3Com's [switching hubs]. I want 3Com to focus its outstanding development and support efforts on its own products.

"3Com doesn't stand to lose anything if the deal doesn't go through, and I've got technical questions about product strategy if it does," Lopez said.

On the Chipcom side, customers openly balked at the idea of being forced to use 3Com switching hubs in the event that Chipcom's Galactica is no longer sold. 3Com has pledged to continue selling Galactica but said it won't develop any new models.

"We're very happy with Chipcom as a solution. If 3Com tells me that I have to buy its LANplex switching hub, I'll switch" to another vendor, said Alan Robson, director of information services at Val-Pak Direct Marketing Services, Inc. in Largo, Fla. But "as long as 3Com maintains the OnCore and Galactica lines, we'll continue to be a customer."

When asked how an acquisition of Chipcom would fit into 3Com's grand product plan, some users were left scratching their heads.

"I've asked myself that question, and I haven't been able to come up with an answer," said John Holton, a vice president at Applications Profile, a 3Com user in St. Petersburg, Fla., that provides application screening and background investigation services.

Putting it together

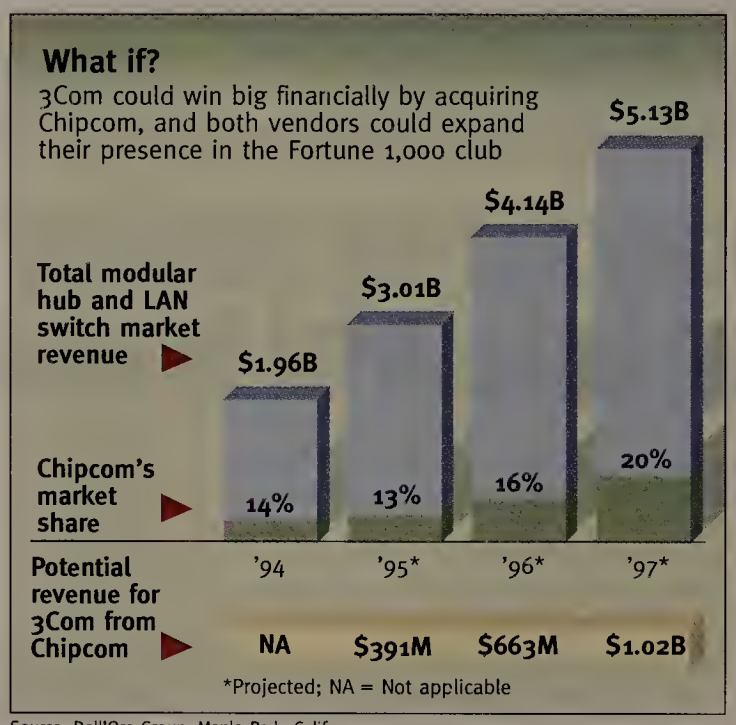
3Com customers were also unsure how the respective 3Com/Chipcom product suites might be integrated if the deal goes through as planned in October.

"It would be silly to drop either line, since both are strong," said Dennis Bell, director of telecommunications at Santa Clara University in Santa Clara, Calif. "I've seen them integrate multiple products from past acquisitions, and it's amazing. They could meld them in a future product line."

The university uses several generations of 3Com products, including the Cellplex Asynchronous Transfer Mode switch that 3Com acquired in last year's purchase of NieeCom, Inc.

Still, 3Com users and analysts did agree that acquiring Chipcom would give 3Com a greater presence and more muscle industrywide.

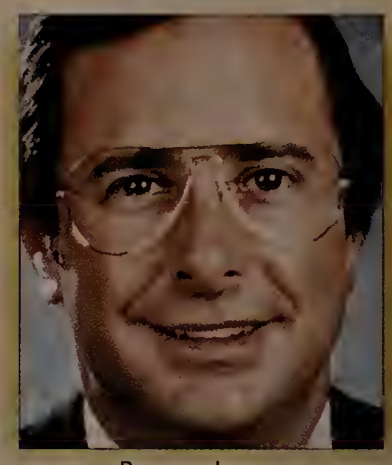
"If the deal goes through, 3Com will be in a stronger position to eompete as the internetworking community consolidates. The competition is going to get fiercer from here on," said Steve Konrad, a network services manager for the Washington Schools Information Processing Cooperative in Seattle.



Source: Dell'Oro Group, Menlo Park, Calif.

@ Talkback@cw.com

Should 3Com buy Chipcom? If so, will you switch vendors and will you consider Cabletron's trade-in pitch? Sound off to us at talkback@cw.com. Include your full name. We'll publish a sampling of reader opinions in an upcoming issue.



ROBERT LEVINE, PRESIDENT, CABLETRON SYSTEMS

"We wanted a say in what happened to Chipcom because we felt that would be in the best interest of our customers. But it took us less than a week to see that a 3Com acquisition of Chipcom would not negatively impact our users."



ROB HELD, PRESIDENT, CHIPCOM

"Cabletron only wanted to play the spoiler on the Chipcom deal. But they don't have the resources or will to do that."



ERIC BENHAMOU, PRESIDENT, 3COM

"Together, we plan to merge the 'best in class' products, technologies and talent from both 3Com and Chipcom to provide the industry's broadest networking suite."

Switching market gets some Grand additions

By Bob Wallace

"Fast" Ethernet pioneer Grand Junction Networks, Inc. will introduce this week two low-cost switches to the workgroup Ethernet switching market and slash the price of its existing switch by 50%.

With Ethernet switching, users and devices that had been forced to share 10M bit/sec. Ethernet LANs can now have their own personal 10M bit/sec. of bandwidth. Or they can get more capacity by being part of a small subnetwork.

Grand Junction's FastSwitch 2100 has 25 switched ports that run at 10M bit/sec. and two fixed 100M bit/sec. ports. It has a list price of $6,495, or $241 per port, and is shipping now.

The FastSwitch 2100 also has 25 switched 10M bit/sec. ports and a minimum of two high-speed expansion slots for 100M bit/sec. ports. In the future, it will support Asynchronous Transfer Mode. It costs $6,295 to $7,295 or $252 to $292 per port. It will ship this month.

Skip MacAskill, a senior research analyst at Gartner Group, Inc. in Stamford, Conn., said that at $240 per port, the FastSwitch 2100 is aggressively priced compared with similar switches from 3Com Corp. In fact, analysts said, the two vendors' prices for this kind of Ethernet switch are about the same.

The FastSwitch 2100 can support up to 1,024 media access control (MAC) addresses. This means the network manager can attach a single user or hundreds of users to each port.

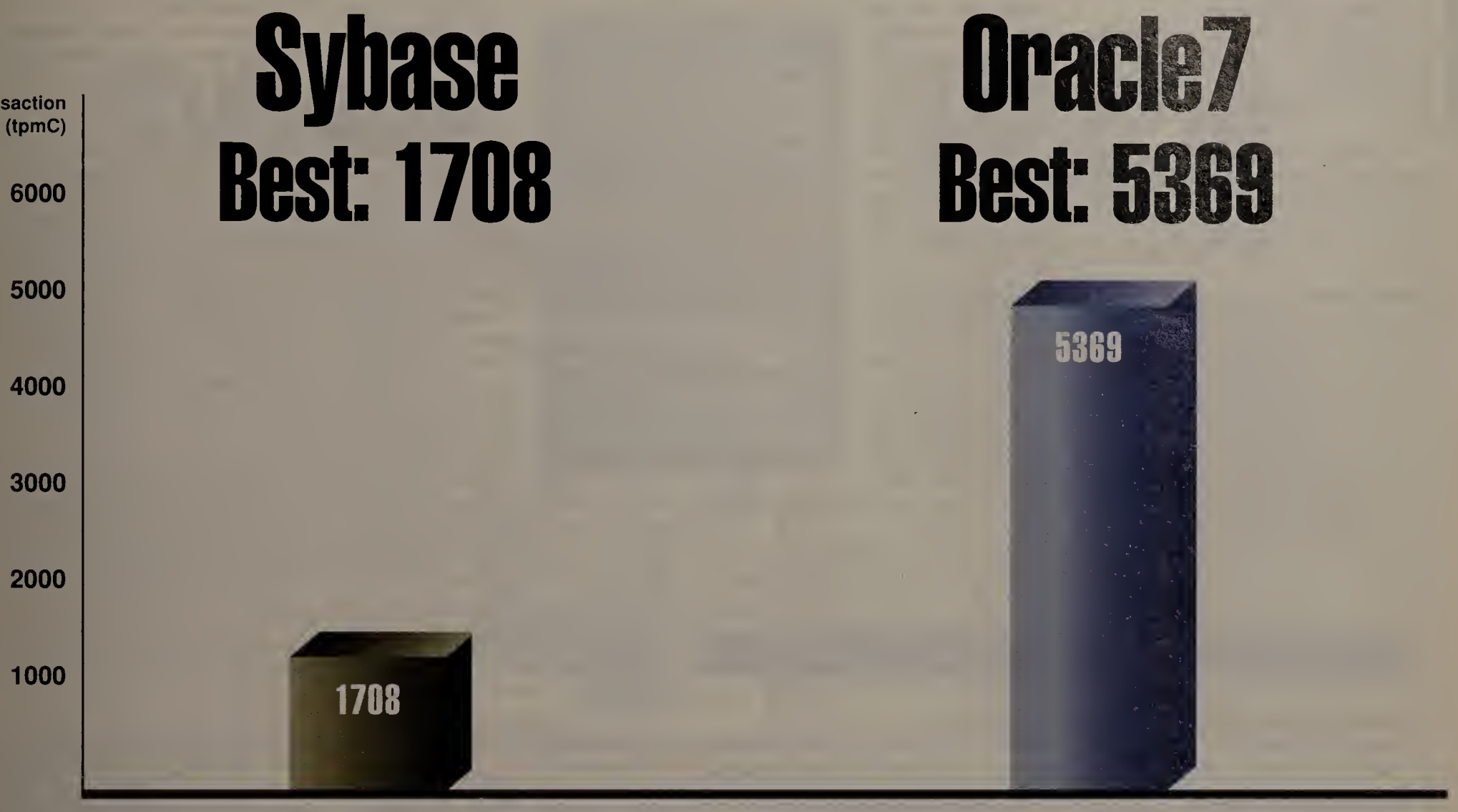
Grand Junction was criticized for supporting only one MAC address per port on its first switch. Supporting many MAC addresses means users need fewer switching hubs. MacAskill said Grand Junction will ship a Unix-based program that will help users manage the new switches by year's end.

Meanwhile, Grand Junction has also halved the price of its desktop Ethernet FastSwitch 10/100. The new price is $150 per port.

& **Switching announcements** boost mid-range LANs. See page 54.

Database Performance

The TPC-C™ test is the industry standard benchmark measuring database On-Line Transaction Processing (OLTP) performance. On July 24, 1995, Hewlett-Packard published an audited TPC-C benchmark of Oracle7 that set the record for open systems performance, beating Sybase System 10's best result on any computer by more than 200%. (It's almost not worth mentioning, but we also creamed Informix.)



Sybase's CEO recognizes they have technology and performance problems. So should you.

" We were slow to realize this [scalability] was an issue in the marketplace."
Mark Hoffman, Sybase CEO, *The Wall Street Journal*, April 14, 1995

" We're trying to investigate the problems now. You peel back the onion, you find out more stuff."
Mark Hoffman, Sybase CEO, *San Francisco Chronicle*, April 5, 1995

Experts and customers recognize that Sybase's problems will take a long time to fix. So should you.

" The time between major enhancements of their [Sybase's] database is the longest of any major vendor."
Salomon Brothers, *Computerworld*, April 17, 1995

" They've got a lot of work to do and they have to go pretty deep in the core of the code."
First Albany, *Information Week*, April 17, 1995

Scalability and parallelism make Oracle7 the technology and performance leader. The results of the HP TPC-C benchmark provide graphic proof.

" Oracle has set the high water mark for open systems platforms. We look for more to come."
Jim Johnson, Chairman, *Standish Group*, July 24, 1995

" Oracle's TPC-C numbers dramatically alter the competitive landscape...Oracle is telling the competition to put up or shut-up."
Peter Kastner, Vice President, *Aberdeen Group*, July 24, 1995

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TPC results as of July 21, 1995. Sybase results based on Digital Alpha 2100, ($555/tpmC). Oracle results based on HP 9000 T500, ($535/tpmC).

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Users welcome Exchange as Mail 3.2 upgrade

Microsoft ships final beta code for mail platform

By Suruchi Mohan

After many months of falling behind schedule, Microsoft Corp. last week started shipping the final beta code for its Exchange mail platform.

Yet despite the company's positioning of Exchange as a client/server messaging platform, users are looking to it mainly as a stable upgrade to Microsoft Mail 3.2.

Exchange includes electronic mail, group scheduling, forms and basic application development. It also includes features to make administration and management of mail simpler (see chart).

Steady focus

But the focus is still E-mail. "Microsoft's priority is its installed base, so it will fix problems with Microsoft Mail and then think about application development," said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston.

Sloane noted that Microsoft wants to provide a smooth migration to its more than 6 million Mail customers. "Because it is so focused on the installed base mail issue, Microsoft is keeping its eye off the growing market of groupware and distributed solutions, which is being dominated by Notes," he said.

Microsoft has long positioned Exchange as a competitor to Lotus Development Corp.'s Notes.

But users, fed up with the administrative hassles of Mail, don't care about application development for now. They are just relieved that Exchange shows promise for solving their reliability and scalability troubles with Mail.

"With Beta 1, I never got above 100 users," said Tom Webb, technology project manager at Shell Services Co. in Houston. Indeed, he said, the database crashed a couple of times. "With Beta 2, I have seen performance improvements," he said.

Users consider scalability of the Exchange server to be a big plus. While administrators are not completely sure how many users the Exchange server will eventually support, they seem confident that the number will range from 500 to 1,000, if not more. Microsoft Mail supports a maximum of 250 users per post office.

Features in Microsoft Exchange Server Beta 2

- Exchange forms designer and Schedule+ group scheduling
- Remote monitoring of servers
- Server-to-server replication; no global replication
- Components for application development
- Support for Windows NT 3.51 and the Exchange client
- Native support for X.400 and Simple Mail Transfer Protocol Message Transfer Agents

Making sure these post offices are current and synchronized is a headache, said Garth Keesler, staff consultant at Intergraph Corp., a computer systems vendor in Huntsville, Ala. "Exchange doesn't eliminate [the maintenance] but simplifies the process. Adding post offices is easier because the server takes care of notifying and synchronizing other post offices," he said.

Further, Exchange offers message tracking, said Sharon Moore, a systems analyst at Chevron Information Technology Co. in San Ramon, Calif. "This is a vast improvement over Beta 1," she said. Moore explained that a queue manager in Exchange lets administrators see if mail is backed up in the post office, which allows them to track mail across multiple sites. "This is very helpful for management," she said.

Unresolved issues

Despite the ease of administration, users have items on their wish list that will remain unaddressed in the first release of Exchange.

"I would like to see it ship; I would like to see laptop replication," Webb said. The mail and calendaring will replicate to the laptop, he explained, but not to the public folders. Here, the replication will be only server to server.

Also, "real" document management — with version control and content searching capabilities — is missing, Moore said. While it is true that Microsoft provides components for building document management applications, to do so would require "going through extra pain," she said.

Greg Levin, lead product manager on Exchange, said the features in this beta are complete. User recommendations will be worked into release candidates, to be followed by the final product at the end of the year, he said.

News Shorts

Bankruptcy shutters Cray Computer

Cray Computer Corp. recently closed its doors for good after a four-month search for new funding proved fruitless. The Colorado Springs-based company, the latest venture of supercomputing legend Seymour Cray, shut down operations and filed for Chapter 11 bankruptcy protection in late March after an expected $20 million cash infusion fell apart. Cray Computer burned through more than $200 million in capital but never sold a system after its 1989 spin-off from supercomputer market leader Cray Research, Inc., which had no ties to the failed company.

AST loses $99.3M in '95

Struggling PC maker **AST Research, Inc.** lost $99.3 million for its fiscal year 1995 on sales of $2.5 billion. For fiscal 1994, AST had earned $31.3 million on sales of $2.4 billion. For the fourth quarter, AST lost $31.6 million on sales of $622 million, compared with a loss of $8.1 million on sales of $584.5 million for the same period the year before. The company completed a strategic alliance with Korea's Samsung Group earlier this year, giving the latter a 40% stake.

Mobile management

A task force aimed at addressing the concerns of network administrators who manage mobile users was launched this week at the TCP/IP Expo in San Jose, Calif. Spearheaded by **Epilogue Technology Corp.** and **Xircom, Inc.**, the **Mobile Management Task Force** will work on finalizing the Simple Network Management Protocol (SNMP) Mobile Management Information Base (MIB). That will then be presented to the Internet Engineering Task Force as a MIB extension of the SNMP.

Nader takes on Gates

Consumer activist Ralph Nader and an affiliated group, the **Consumer Project on Technology** in Washington, last week joined the criticism of **Microsoft Corp.**'s decision to bundle The Microsoft Network access software with Windows 95. Nader also criticized the Windows 95 Registration Wizard, which collects information about a user's PC, calling it an invasion of privacy.

No-RISC Internet router

Compatible Systems, Inc. in Boulder, Colo., has opened the throttle on Internet access with the release of the high-speed RISC Router 2800I, which lets users establish links to the Internet at T1 speeds over leased, switched or Integrated Services Digital Network lines. The RISC Router 2800I lists for $2,195 and is shipping now.

Keeping out NetWare users

Internetware, Inc. has begun shipping IWare Connect Version 1.1, which lets network administrators limit and control **Novell, Inc.** NetWare users' access to unwanted Internet sites. IWare Connect is a NetWare Loadable Module that runs on top of the TCP/IP protocol stack bundled in every NetWare server. Pricing begins at $995 for a five-user license.



Boole & Babbage posts profit

Boole & Babbage, Inc. reported a profit of $3.2 million for its third quarter ended June 30 on revenue of $37.3 million. This compares with a profit of $228,000 and $33 million in revenue for the same period last year. The low profit last year was due to a research and development write-off of $3.2 million. The client/server software vendor said international business picked up greatly this past quarter, though North American revenue was down.

Kodak licenses CA programs

Eastman Kodak Co. signed a multiyear software licensing agreement with **Computer Associates International, Inc.**, under which Kodak and outsourcer **Integrated Systems Solutions Corp.** will be able to run CA database and systems management software throughout North and South America. Terms of the deal were not disclosed. Separately, CA said it received 91% of Legent Corp.'s outstanding common stock in response to its $47.95 per-share tender offer (see story, page 32).

IBM makes Italian link

IBM and STET, the Italian holding company that owns **Telecom Italia**, announced a preliminary agreement to become global partners on a wide range of business and consumer services. The two companies will combine their backbone networks as part of a 50/50 global joint venture and provide value-added telecommunications and network services. Both firms expect to expand the venture in the coming months to include additional telecommunications service providers.

SHORT TAKES Robert B. Palmer, chairman, president and chief executive officer at Digital Equipment Corp., was named chairman of the **Computer Systems Policy Project**, a coalition of CEOs from 13 U.S. computer companies.... **Walker Richer & Quinn, Inc.** in Seattle last week added a new version of its Windows PC connectivity software for Hewlett-Packard Co. and Digital Equipment Corp. hosts.... **Hewlett-Packard** cut prices on its PC servers by up to 5% and on storage capacity by as much as 25%.... Although it is in the process of being bought by Adobe Systems, Inc., **Frame Technology Corp.** recently completed its acquisition of **Mastersoft, Inc.**.... **Arcada Software, Inc.** has acquired **Sytron Corp.**, a maker of OS/2 data protection software and a subsidiary of Rexon, Inc.

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IBM/Cisco deal to ease legacy moves

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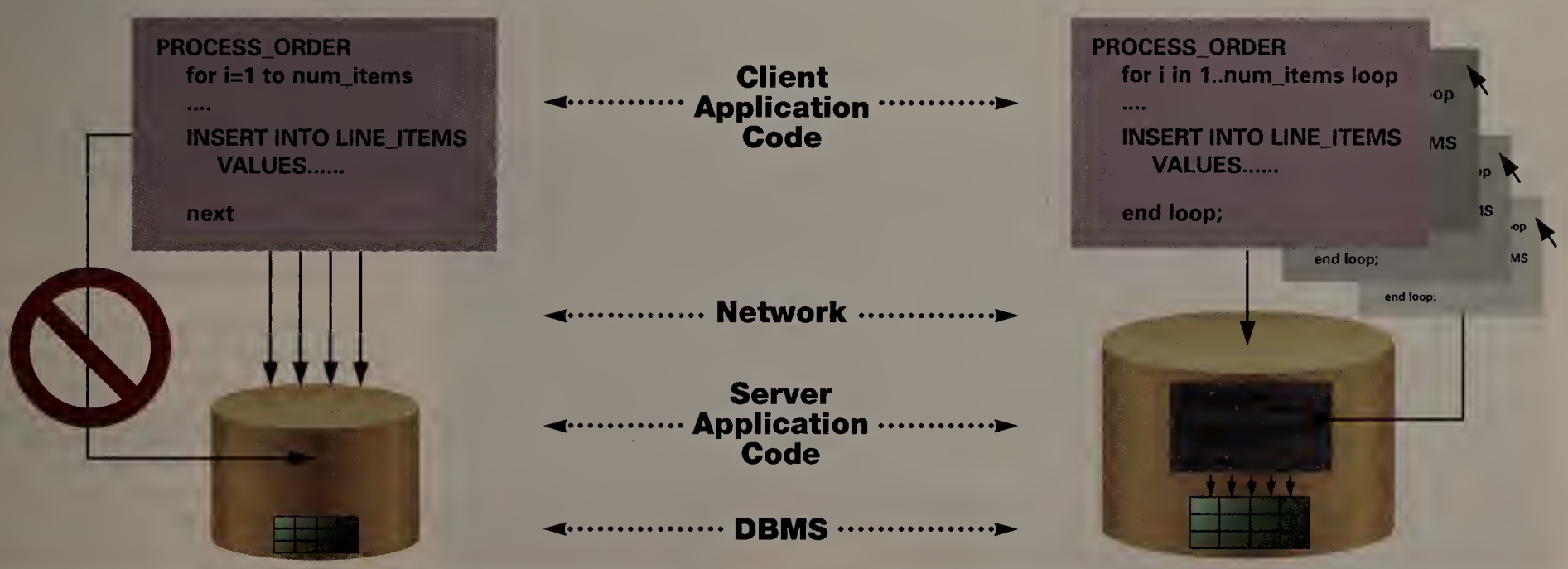
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Application Partitioning

The network links the client to the server. The client and the server communicate by sending messages across this network. The number of messages exchanged between the client and the server is critical in determining overall system performance. Oracle Developer/2000 drag and drop application partitioning makes it easy to minimize the number of messages exchanged between a client and a server, optimizing both response time and system performance.

Sybase

PowerBuilder



PowerScript does not run on the server, therefore drag and drop application partitioning is impossible.

An application program developed with Sybase PowerBuilder 4.0 must run entirely on the client computer. The above program enters a purchase order into the database. If this application is built entirely using PowerBuilder 4.0, every item purchased requires a separate pair of messages to be exchanged between the client and the server computer. Therefore, a simple ten-line purchase order requires at least 20 messages to be passed on the network. This high volume of message traffic will slow response time for an individual user, and bottleneck the entire system with a large number of users. And there is no easy way to fix this.

Oracle

Developer/2000

PL/SQL runs on the client and server, therefore drag and drop application partitioning is easy.

Contrast this with the same exact application written with Developer/2000 and tuned using drag and drop application partitioning. It takes a few seconds to drag that portion of the application that communicates with the DBMS off the client computer and drop it onto the server. Now, when you enter a purchase order using the newly partitioned application, only one pair of messages is sent from the client to the server—regardless of how many items are in the order. The optimally partitioned application delivers instantaneous response time to an individual user. And the partitioned application can support ten times more users than when the application ran entirely on the client computer. If you have more than a handful of users on your network, call Oracle for scalable software. 1-800-633-1071, ext. 8192.

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Sprint boosts ATM appeal with T1 access

By Bob Wallace

Sprint Corp. last week smashed through the biggest barrier to wide-scale user adoption of Asynchronous Transfer Mode (ATM) by finally providing access to the service via widely used, lower-speed T1 lines.

While analysts who track ATM concur that the lion's share of users can't afford 45M bit/sec. (T3) access pipes, which aren't widely available anyway, they predict a huge user base will find 1.544M bit/sec. (T1) access to ATM far more affordable.

"T1 access to ATM provides a strong incentive for users to move to ATM," said Bill Horst, chief of the General Services Administration's communications branch in Philadelphia.

"Pricing for a T1 access line can start at as little at $3,800, while pricing for a T3 access line starts at about $20,000," said Beth Gage, broadband consultant at TeleChoice, Inc. in Verona, N.J. "And Sprint is making its ATM service even more attractive by pricing it comparable to its frame-relay service."

Sprint's frame-relay pricing carries a monthly charge that ranges from $204 for a 56K/64K bit/sec. port to $860 for a 512K bit/sec. port. The carrier charges $1,800 for a T1 port. Sprint charges users a one-time $250 fee per port.

So for the price of its widely used frame-relay data service, users can send video and voice over a single high-speed line to the Sprint network.

That's service

Sprint's ATM service allows T1 access to two key types of service:

Service type	What is it?
Constant Bit Rate	Provides constant bandwidth for voice and video traffic that can't tolerate transmission delays
Variable Bit Rate	Supports bursts of data traffic associated with LAN interconnection that don't need constant bandwidth

But there is a drawback. Analysts note that running ATM on a T1 results in the loss of roughly 10% of that line to overhead, a key issue for some users.

"That's a concern for us because we want to perform video transfers, and we probably can't afford to lose 10% of the bandwidth to overhead," said Camil Samaha, a network engineer at Thomson Technology Services in Rockville, Md. "We'll explore other alternatives."

Nonetheless, Sprint's move is the latest in a recent flurry of activity — including deep ATM switch price cuts and equipment introductions — aimed at making ATM more palatable to the masses.

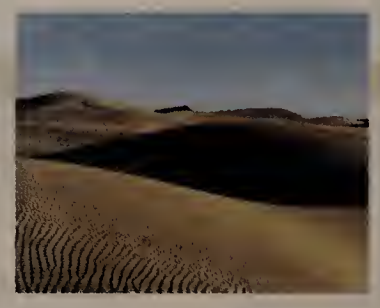
Leader of the pack

Sprint is the first of the Top 4 long-distance carriers to offer T1 access nationwide, though AT&T Corp. has said it will follow suit by year's end; MCI Communications Corp. said it is developing the capability; and WilTel provides T1 access on a case-by-case basis.

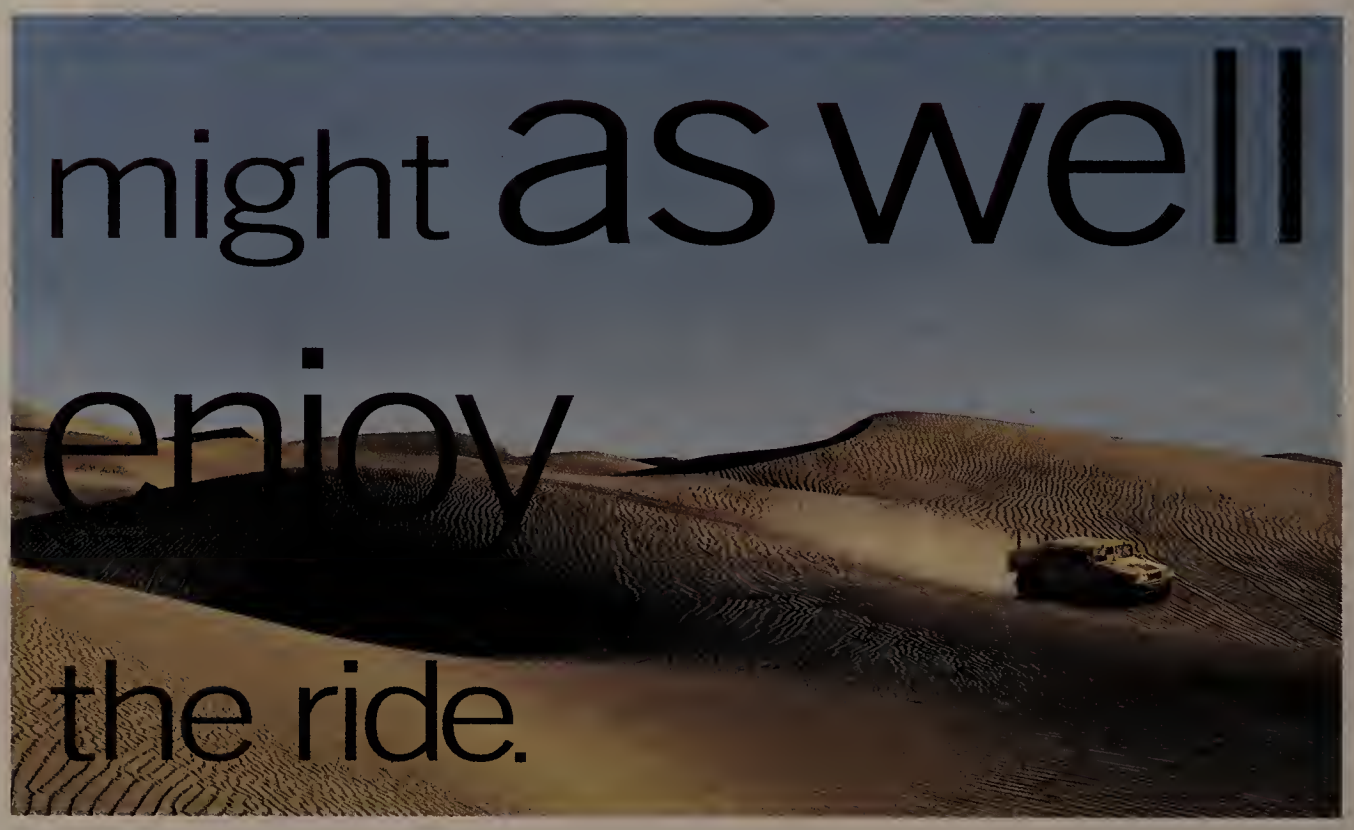
Sprint began supporting T3 access to its ATM service in 1993. But carriers have complained that a dearth of equipment for their networks and gear users need to use the service has held up support of T1 access to ATM.

To address the problem, the company has worked with Hitachi Ltd. to develop a network switch that can aggregate multiple T1 access lines into T3 links to the carrier's ATM backbone network, which uses NEC America, Inc. switches.

Sprint is also working with Fore Systems, Inc., using its ASX-200BX ATM switch, and ADC Kentrox, using its T1/E1 Access Concentrator, to provide sorely needed on-site access equipment to users.



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TV-quality video comes to the portable market

But will users want a notebook that costs over $7,000 and weighs about 8 pounds?

By Mindy Blodgett and Tim Ouellette

Panasonic Personal Computer Co. pulled ahead of the multimedia notebook pack last week with the announcement of a full-screen, full-motion video enhancement to its V41 portable computer series. But industry sources said IBM PC Co. is hot on its heels with a similar product.

Panasonic and IBM are banking on what they hope will be a growing market for notebooks with snazzy, television-quality features.

Yet while some industry observers say the full-featured multimedia notebooks are the logical next step for mobile users, the heavy price tag — averaging more than $7,000 — may dissuade early adopters. Another burden is the weight and size of the machines. The Panasonic system tips the scales at about 8 pounds, for instance.

With its Intel Corp. 90-MHz Pentium processor and an integrated CD-ROM drive, the Panasonic notebook is the first on the market to offer the option of Motion Picture Experts Group (MPEG) support — the full-screen, full-motion standard that provides video playback with 262,000 colors.

The notebook is aimed at markets such as field service automation, interactive training, sales presentations, research and data retrieval, company officials said.

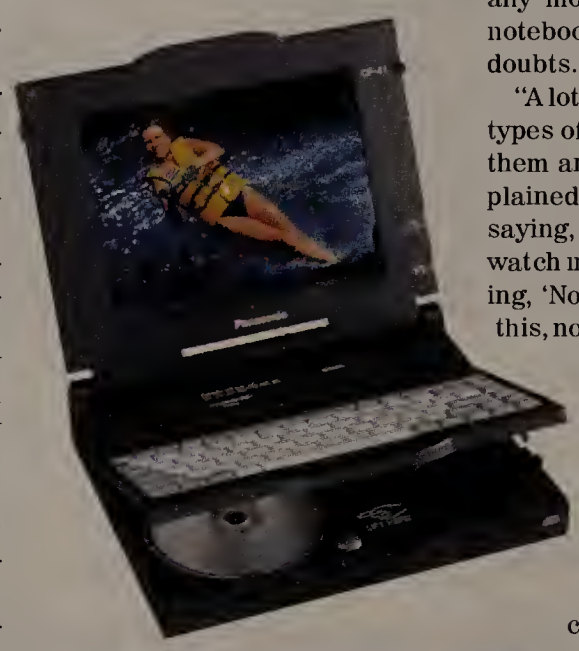
Ahead of the pack

IBM has gathered the most momentum in the current notebook market with its ThinkPad series, analysts noted. Other major companies, including Compaq Computer Corp., Toshiba America Information Systems, Inc. and Digital Equipment Corp., are working on or have released new multimedia notebooks as well.

"Panasonic has been in the front of this," said Timothy Schmidt, an analyst at Encore Consulting Group, Inc. in Orlando, Fla. "And they may well be right — there may be a market."

At pharmacy company Parke-Davis, for example, 300 field service representatives are using Panasonic's V41 multimedia notebooks to give their sales pitches some razzle-dazzle.

"Our sales force finds that the multimedia function adds a real wow factor to meetings," said Christopher Colucci, a project leader at Parke-Davis, the pharmaceutical division of the Warner Lambert Co. in Morris Plains, N.J. Colucci is testing the new Pentium machines. "I can really see the possiblity of using these machines for many things, such as training," he said.



Features of the Panasonic V41 MK II multimedia notebook include:

- 90-MHz Pentium processor
- A high-contrast, nonglare, 10.4-in. thin film transistor LCD screen
- 48M bytes to 1G byte of RAM
- More than six hours of battery life

But the heavier weight of the notebooks "is definitely an issue," he added. Still, the trade-off of more ruggedized features for the extra weight is a fair one, he said.

"One of our salespeople actually ran over his notebook with his car, and all we had to replace was the CD-ROM. The hard drive held up," Colucci said.

Some mobile users remain skeptical that multimedia notebooks serve a driving need right now, however.

Victor E. Mutnick, a corporate vice president at New York Life Insurance Co. in New York, said he sees many of the company's 5,000-plus sales representatives eventually moving into the multimedia notebook arena. But he has his doubts.

"A lot of our sales reps say those types of computers come between them and the client," Mutnick explained. "It's like walking in and saying, 'OK, now I want you to watch my TV,' and the client is saying, 'No, I want you to sell me on this, not the computer.'"

The top-of-the-line Panasonic Pentium machine costs $7,699, plus $649 for the MPEG cartridge, a prohibitive cost for many users.

Other notebook products on the horizon include IBM's ThinkPad 760 notebook, the first to have a 12.1-in. thin film transistor display; it will have a 120-MHz Pentium processor, according to sources close to the company. Prices will come in below the $7,000 barrier, they added.

IBM will also aggressively seek the low-end market with a line of ThinkPads that will cost between $2,000 and $3,000 and are due out in September, the sources said.

& **Speech** is becoming more important in multimedia. See page 47.

Intel shelves NSP interface

By Tim Ouellette

■ Intel Corp. will temporarily curtail development of its Native Signal Processing (NSP) interface, the company confirmed last week. The decision appears to be in response to high-level pressure from Microsoft Corp. over the multimedia-enabling technology, according to sources near the companies.

An Intel spokesman denied any heat from Microsoft, saying, "We are working with Microsoft to define a new baseline platform." But several sources with close ties to the two firms said Microsoft executives were angered at what they perceived as Intel's effort to create a non-Microsoft-driven application programming interface and lobbied intensively to get Intel to stop NSP efforts.

NSP would improve ease of use for multimedia applications by managing sound, graphics and communications at the processor level. That would free users from sound cards, graphics cards, video cards and, eventually, modems. NSP was the centerpiece of Intel President and Chief Executive Officer Andrew Grove's keynote address at Comdex/Fall '94 and was expected to be completed last month.

But users will have to keep dancing the peripheral card shuffle for a while longer. The spokesman said Intel will publish a document later this year or early next year that defines the new platform.

NSP would improve ease of use for multimedia applications by managing sound, graphics and communications at the processor level. That would free users from sound cards, graphics cards, video cards and, eventually, modems.

Strike 2

Dean McCarron, principal at Mercury Research in Scottsdale, Ariz., said the flap is another dent in Intel's efforts to push multimedia, following the company's stagnant ProShare videoconferencing initiative. McCarron said Intel wants to get computing-intensive applications such as multimedia on the market to drive future sales of its next-generation chips.

Microsoft's Windows 95 will contain some of the basic capabilities of NSP. Intel started to develop on Windows 3.1 and Windows 95, but has since moved its focus to Windows 95 only.

Intel/HP chip to jointly offer Unix, Windows

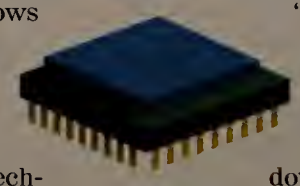
Will also run NT, NetWare

By Jean S. Bozman

Hewlett-Packard Co. plans to bundle its Unix operating system and Windows on at least one of the 64-bit chips it is jointly developing with Intel Corp., company executives said last week.

Industry analysts said they expect those chips to arrive sometime in 1997.

The Unix/Windows combination would eliminate the need to emulate Windows on Unix machines such as engineering workstations. Combining the two would also remove an information systems headache because Windows emulation and translation slow performance.



Rich Sevcik, general manager of HP's systems technology group, said a special effort will be made to combine the HP-UX Unix operating system with a Microsoft Corp. Windows 95 follow-on. The combination targets Unix users who want to use Microsoft's office applications.

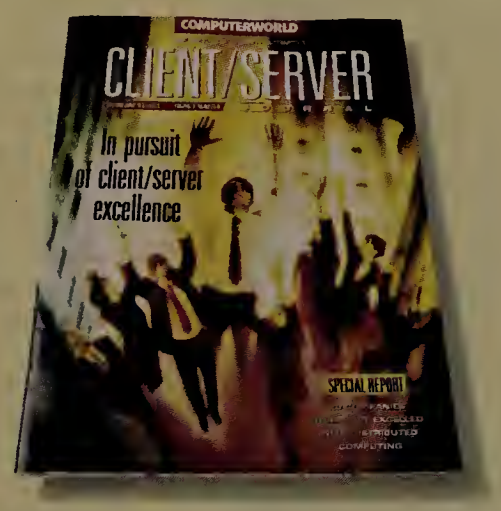
"To get operating systems to coexist is a lot of work," said Sevcik, who manages HP's relationship with Intel's chip design teams. The chip series ranges from low-cost chips for desktops and laptops to high-performance chips for servers. They will run Unix, Windows NT and Novell, Inc.'s NetWare.

"We will be able to run any of those operating systems on any of those chips," he said.

But the mechanics of how HP will pull off the Unix/Windows combination on a single chip are still unclear, said Thomas Kucharvy, president of Summit Strategies, Inc. in Boston.

It would be easier to simply graft Windows 95's 32-bit application programming interfaces on top of HP's Unix system, said Andrew Allison, a microprocessor analyst in Carmel, Calif. That is something Digital Equipment Corp. is already taking steps to do with Digital Unix, he noted.

Recently, *Client/Server Journal* profiled the best and brightest companies using distributed computing.



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Digital earnings hit mark

Cost-cutting plan, continued sales growth lead to year-end profit

By Michael Goldberg

A day before announcing closer business ties with Microsoft Corp., Digital Equipment Corp. last week reported earnings of $160 million in its fourth quarter and a year-end profit for the first time since 1990.

Robert Palmer, Digital's chairman and chief executive officer, said the company is working to bolster its turnaround after more than a year of slashing payroll and reorganizing its business management.

"We'll continue to make any corrections we need to make" to respond to market conditions, Palmer said. He said he believes Digital is poised to sustain its recent trend of profits next year.

The company benefited from a sustained cost-cutting program, and Digital officials said continued sales growth in PCs and Alpha servers and workstations more than offsets dropping sales of its old VAX line.

Palmer said sales of Digital's Alpha servers and workstations grew by 32% during the quarter, compared with the same quarter last year. Digital has sold more than 127,000 systems based on its 64-bit Alpha microprocessor since late 1992, accounting for approximately $5 billion in sales, Palmer said. PC sales climbed about 20% in the quarter vs. the same quarter last year.



Digital Chairman and CEO *Robert Palmer said the firm continues to make 'any corrections we need'*

Changing the PC guard

Company officials said they were disappointed in the PC business growth in which Digital ranked 11th at the start of this year, according to a survey by Dataquest, Inc. Last Thursday, Digital announced the abrupt resignation of Bernhard Auer, head of its PC business unit and a former Compaq Computer Corp. executive.

At the same time, company officials said revenue drawn from sales and service of its VAX line of computers dropped. Digital declined to specify by how much, but analysts said the company estimated VAX product sales had dropped by 35% to 50% in the past three months.

Digital also told analysts its new reliance on resellers and retailers would sap some sales muscle from its traditionally strong fourth quarter because these indirect channels tend to peak at the calendar year's end.

Martin Ressinger, an analyst at Duff & Phelps Investment Researeh, Inc. in Chicago, said Digital's fourth-quarter sales looked better when divestments such as "a fire sale" on VAX systems to clear out inventory were taken into account. "It might have been better," he said. "They've gone through a pretty extreme turnover with a changing sales structure" to emphasize resellers.

Others expressed doubts about Digital's progress. A rising tide of technology investments should have lifted Digital's profit boat higher, said Donald Brown, chairman of D. H. Brown Associates, Inc. in Port Chester, N.Y. Digital fails to match other vendors such as IBM, Hewlett-Packard Co. and Sun Microsystems, Inc. in product revenue growth.

Sales channels

Once home to a huge direct sales force, Digital markets 60% of its products through indirect channels such as resellers and, as with PCs, retail stores, Chairman and CEO Robert Palmer said. The firm's sales staff still caters to 1,000 of its largest customers.

Windows NT

CONTINUED FROM PAGE 1

tering technology for future versions of Windows NT (see story below).

Clustering, which uses a combination of hardware, software and shared memory, is a way to connect separate servers into one loosely coupled computer system.

"It's a wise move by both parties. The clustering software that DEC has developed over a number of years is extremely good," said Lynn Blackburn, MIS director at Pine Co., a marketing firm in Santa Monica, Calif. "Why should Microsoft have to reinvent the wheel for something that's already there?"

Blackburn said the deal would prompt him to consider using Windows NT in his shop, which has three clustered Digital MicroVAX computers and a PC LAN.

Microsoft also promises to ship future software packages for Digital's Alpha systems at the same time that versions for Intel Corp. or RISC-based systems go out the door (see chart).

Yellow Pages publisher Pacific Bell Directory in San Francisco is evaluating Windows NT as a server platform for distributed systems, said Christopher Lloyd, a technical staffer.

"From a corporate standpoint, Windows NT seems to be a much more robust system for distributed computing" than Windows 95, Lloyd said. Pacific Bell Directory's 1,000-user site has long had a combination of Digital servers and Macintoshes.

The ultimate goal of both companies is to have enterprise computing environments "look and feel like a seamless extension of a Windows desktop to the user," said Robert Palmer, Digital's chairman and chief executive officer.

Access to Digital's 19,000-person multivendor service will help Microsoft address its weaknesses in customer service and systems integration, said Jon Oltsik, an analyst at Forrester Research, Inc. in Cambridge, Mass. "That's been the wild card that the Unix guys have been trying to play" as they eompete against Windows NT, he said.

"For Digital, this [pact] gets them really in the front car of the NT train, which right now is gaining momentum," Oltsik added. "It really puts them ahead of other vendors like Unisys and AT&T GIS."

But not everyone applauded the tighter ties binding the two vendors. Irv Shapiro, president of Metamore Technologies Ltd., a Chicago consulting firm, said Digital gave up too mueh to Microsoft by sharing its clustering technology. "Digital is desperate. They're trying to gain hardware market share in the NT segment," Shapiro said.

Shaking hands

Microsoft and Digital's extensive agreement includes the following:

- Microsoft licenses Digital's clustering technology to make a future version of Windows NT more powerful for enterprisewide applications
- Digital gets between $50M and $100M to train a sales and support group of 1,500 people
- Microsoft guarantees that future products such as Microsoft Office will support Alpha as well as the Intel and RISC platforms
- Both vendors agree to share patented information

The Windows NT installed base stands at about 1.25 million, with an estimated 1.4 million units ready to ship this year and another 4 million units next year, according to Computer Intelligence InfoCorp in La Jolla, Calif.

Trailing behind

Digital's share of the Windows NT market — less than 2% — is far behind market leader Compaq Computer Corp., said Scott Winkler, a vice president at Gartner Group, Inc. in Stamford, Conn. Following an industry trend, most Digital machines running on NT are powered by Intel chips.

Regardless of how much the deal promises, some Digital users don't see Microsoft server systems in their future.

A lack of Windows NT versions of key applications running at the Department of Public Works in Sacramento, Calif., will keep that city agency a mostly Digital shop, said Renee Traud, a senior departmental data analyst there.

Senior editor Kim S. Nash contributed to this story.

Digital adds to its virtual LAN lines. See page 54.

Clustering strength

Without the saving grace of Digital's clustering technology, Microsoft would face an uphill climb as it tries to lash multiple Windows NT servers together, industry analysts said last week.

Along the way, the leading PC software vendor would find it hard to displace large Unix servers in corporate environments with its relatively new 32-bit operating system. So to make its mark in the enterprise, NT must tie together more processors than the four it can currently handle, Microsoft Chief Executive Officer Bill Gates acknowledged last week.

"It's tough to get up above eight or 16 processors [on a common memory bus] and see much benefit," Gates said.

Unix servers, however, can now scale to 32 or 64 processors.

Microsoft plans to leverage Digital's clustering capabilities on arrays of smaller NT servers tied with networking and database software. The quick fix will arrive later this year, when Digital ships its NT clustering technology, which is now in its shakedown phase.

Database lab

To boost the capabilities of NT server arrays, Microsoft is starting up a parallel database lab in San Francisco. Heading the effort is Jim Gray, who was a database architect at Digital and IBM. Gordon Bell, a Microsoft technical adviser and designer of Digital's VAX, recently joined the project as well.

"Upsizing from the desktop is going to just totally wipe out downsizing," Bell said last week. He said information systems built from PC parts, high-speed networks and distributed databases will be cost-effective alternatives to large-scale multiprocessors.

Gray said his team is nearing completion of application interfaces that use X/Open Co.'s XA transaction manager standard to link NT-based Microsoft SQL Server databases. The code is set to appear in NT within a year — and it could become a de facto standard through massive NT sales, he said.

"You can stack lots and lots of database systems side by side by side," Gray said. "It's a poor man's distributed database."

—Jean S. Bozman

AT&T GIS pitches multiprocessor NT Server

By Stuart J. Johnston

AT&T Corp.'s Global Information Solutions unit is now selling Mierosoft Corp.'s Windows NT Server on multiprocessor servers with up to 16 processors, but there's a catch — NT doesn't appear to run well on 16 proecssors.

Even Microsoft Chairman Bill Gates admits that beyond four processors, NT users don't "see much benefit." (See story, page 14.) Nonetheless, AT&T GIS is pitching its 3500 series multiprocessor machines to customers interested in cutting costs by consolidating LAN servers.

Some users interested in such machines say the message they get from Microsoft is that NT Version 3.51 and SQL Server 6.0 are more scalable than previous versions, but claims of good performance do not go as far as 16 processors.

AT&T NT

AT&T GIS says it's living up to its promise to port its Unix-based enterprise systems management tools to Windows NT

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Top End — Middleware for managing applications in distributed systems

Advanced Server for Unix — Provides NT's network operating system running on Unix

"The last time I talked to [Microsoft], they said NT scales to six or eight processors," said Colin Carpi, president of Chartwell Advisory Serviees in Penn Valley, Pa. "They have advised me that if I want to use NT for a large on-line transaction processing system, that I'm better off using a network of relatively small machines [with four processors each]."

AT&T executives acknowledged that 16 processors might not be realistic but emphasized that they are trying to "educate the market" on the notion that four processors is not a permanent limitation, said Martin Sinnott, marketing director for software at AT&T GIS.

Customers can reduce costs by using symmetrieal multiproeessing (SMP) servers, which leverage multiple processors to allow one box to do the work of several servers, according to AT&T GIS. Traditionally, PC server operating systems have performed poorly in SMP environments, so some saw the 32-bit NT as a potential boost for the technology.

Yet benchmarks provided by both AT&T GIS and Microsoft show that when SMP servers run a single application, performance starts to taper off at around six proecssors. Most PC server makers cap their SMP configurations at four processors for performance reasons.

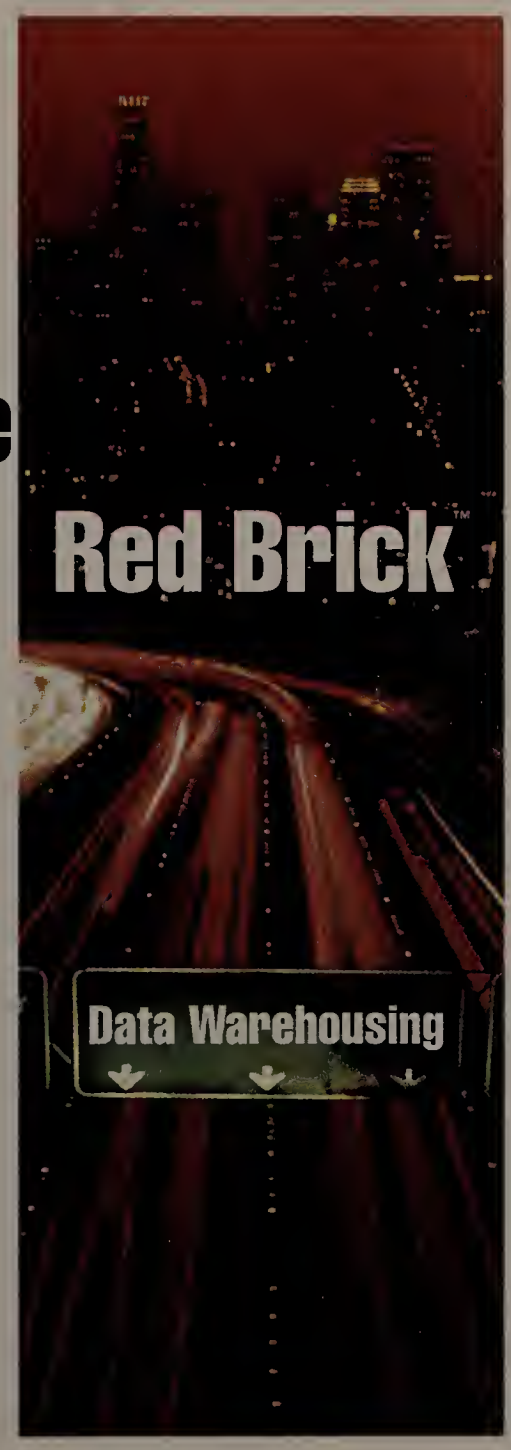
Still, NT may get a chance to prove itself later this year, when Microsoft finally ships its Exchange messaging server.

"I ean promise that with Exchange [Server] coming this winter, it's going to be an asset having [a] maehine like [the AT&T box]," said Briscoe Stephens, coordinator for space sciences in the Advanced Scientific Information Systems group at NASA in Huntsvillc, Ala.

However, analysts were skeptieal. "I'd be surprised because a mail application is I/O bound, and that is whcre you see a limitation to scalability," said Philip Johnson, direetor of Unix and advanced operating environments at International Data Corp. in Mountain View, Calif.

IBM's PowerPC is a screamer but lacks a lot of needed ingredients. See page 40.

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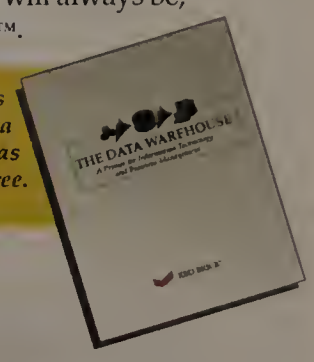
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Digitalk, ParcPlace outline merger plan

By Elizabeth Heichler

ParcPlace Systems, Inc. and Digitalk, Inc. last week laid their cards on the table. The two Smalltalk market leaders, who announced merger plans in May, used a joint user conference to detail a road map of how two previously competing product lines will be integrated.

The companies also showed a sneak preview of a technology code-named Wadsworth that will allow customers to deploy applications on the World Wide Web without worrying about differences among Web browsers.

The merger, which should be finalized this month, will create ParcPlace-Digitalk, Inc., bequeathing the new company the lion's share of the market for the Smalltalk object-oriented programming language, according to International Data Corp., a market research firm in Framingham, Mass.

Merge at ParcPlace

Schedule for the ParcPlace-Digitalk product-line merger

Q4 1995

Next release of each company's products (VSE 3.1 and VW 2.5) ship as previously scheduled, but with enhancements so they are 100% language- and syntax-compatible

Q2 1996

Release of VanGogh 1.0 – converged product based on VW that incorporates key features of VSE

will be incorporated into VanGogh include the following:

- The Parts workbench for assembling applications from components.
- Team development support, known as Team/V.
- Smalltalk Link Libraries.
- Wrapping technologies for integrating legacy Cobol and CICS applications.
- Windows 95 compliance.

VanGogh "will leverage the best of both product offerings," said Roy Wheeler, a VisualWorks user and consultant in the Technology Infrastructure Group at American Express Travel Related Services in Phoenix. "It's going to be challenging, but I have a high degree of confidence they can pull it off."

Adrian Bowles, an industry analyst and president of Atelier Research in Westport, Conn., said it is unusual for companies to divulge such plans prior to finalizing a planned merger, but he said it is a good move to reassure customers from both camps.

Although ParcPlace's technology will ultimately dominate, Bowles said he does not consider that to be a negative thing for Digitalk customers, since ParcPlace has recognized the strengths of the Digitalk product and will incorporate them into VanGogh.

Several Digitalk users said they would have preferred to see the merged company base VanGogh on VSE with some VisualWorks enhancements.

Options expand for integrating applications. See page 40.

Stamp of approval

Users gave a thumbs-up to an aggressive schedule that calls for delivery next quarter of new versions of each company's Smalltalk development tools — ParcPlace's VisualWorks (VW) and Digitalk's Visual Smalltalk Enterprise (VSE) — enhanced to be language- and syntax-compatible. VisualWorks has been known for its broad cross-platform and server support, while VSE has been considered a strong desktop offering.

These products will be followed by delivery early next year of a merged Smalltalk development environment called VanGogh. The product will be based on VisualWorks but will incorporate several key features of VSE, according to Bill Lyons, who will be president and chief executive officer of the merged company.

Elements of Digitalk's VSE that

Report raps IS practices at IRS



By Gary H. Anthes

WASHINGTON

For the 37th time in eight years, the General Accounting Office has issued a report critical of information systems development activities at the Internal Revenue Service.

In an unusually comprehensive look at the IRS's mammoth Tax Systems Modernization program, the GAO echoed earlier critiques that found poor IS management practices, lack of an integrated systems architecture and immature software development practices.

"The government's investment of what could be more than $8 billion ... is at serious risk due to remaining pervasive management and technical weaknesses that impede modernization efforts," the GAO said. The congressional audit agency listed 11 areas where improvements are needed and sketched out how they might be made.

A taxing situation

The General Accounting Office issued a report that blasted the IRS for shortcomings, which included the folowing:

- No comprehensive business strategy to promote electronic filing.
- Incomplete and inconsistent strategic planning.
- Information technology not managed as investment.
- Immature software development capabilities.
- Inadequate system testing.
- Inadequate cost/benefits analysis.

Source: General Accounting Office, Washington

As usual, the IRS concurred with the GAO findings but responded that it was making progress on all items. The tax agency said it has created a senior "modernization executive" position, developed a comprehensive set of software metrics and taken other actions to address GAO criticisms.

But for some, the remedial steps are too little, too late. Two weeks ago, the Senate Appropriations Committee approved $672 million for the tax system modernization next year — $49 million shy of the House appropriation and $359 million less than the IRS had requested.

Rona Stillman, chief scientist for computers and communications at the GAO, said a big budget cut might be just the thing to jolt the IRS out of a business-as-usual mentality. "If that causes a sufficient crisis, they'll rethink what they are doing," she said.

Culture shock

Stillman said the IRS's organizational culture had prevented it from responding adequately to repeated calls to develop an integrated system plan and architecture. "They have independent, autonomous islands of power," she said. "They have long operated that way and continue to operate that way." Especially troubling, the GAO said in its report, is the IRS's lack of a comprehensive plan to move substantially to electronic filing. Its strategy focuses on a small portion of all filers — those who file using third parties, have simple returns and are expecting refunds.

The IRS said it has created a working group to find ways to broaden public access to electronic filing and provide more incentives to file electronically.

FAA speeds plan to replace traffic control systems

By Gary H. Anthes

WASHINGTON

The Federal Aviation Administration (FAA) last week responded to a growing number of computer failures with plans to begin installing new mainframes at air route traffic control centers in October 1997, more than a year earlier than it planned.



The FAA said it could no longer wait until new software is written as part of its planned $4.8 billion overhaul of the nation's air traffic control system. Instead, it will port old software, used to track airplanes between cities, to new IBM ES/9121 mainframes.

FAA officials said there have been 20 failures in the old IBM 9020E mainframes at five control centers in the past four months, most recently at the Aurora, Ill., Air Route Traffic Control Center [CW, July 31]. When one of these computers goes down, controllers switch to a cumbersome backup system and inerease the spacing between flights to ensure safety. Flight delays result.

The backup systems will continue to be used until the new computers are installed; FAA officials insist they are safe. But others are not so sure. Last week, the National Transportation Safety Board said it had launched an investigation into the safety of the present system and its backup and would report its findings early next month.

FAA Administrator David R. Hinson said last week that performance of the computers had deteriorated over the past three years, and the time required to repair them had increased.

However, in announcing the plan to bring in the new computers early, Hinson said, "While this action is being undertaken as quickly as possible, the current procurement rules mean the first replacement will not occur until early 1997, and that's too long to wait."

An FAA spokesman explained it would also take considerable time to port the old computer code — assembler language, Jovial and other languages — and test it. The software produces the displays that controllers see on their radar screens.

The first new computer will go to the Aurora center, with machines shipping to centers in the Dallas/Fort Worth, Texas; Washington; Cleveland; and New York areas at one-month intervals.

The cost of the five new systems will be approximately $65 million, the FAA said.

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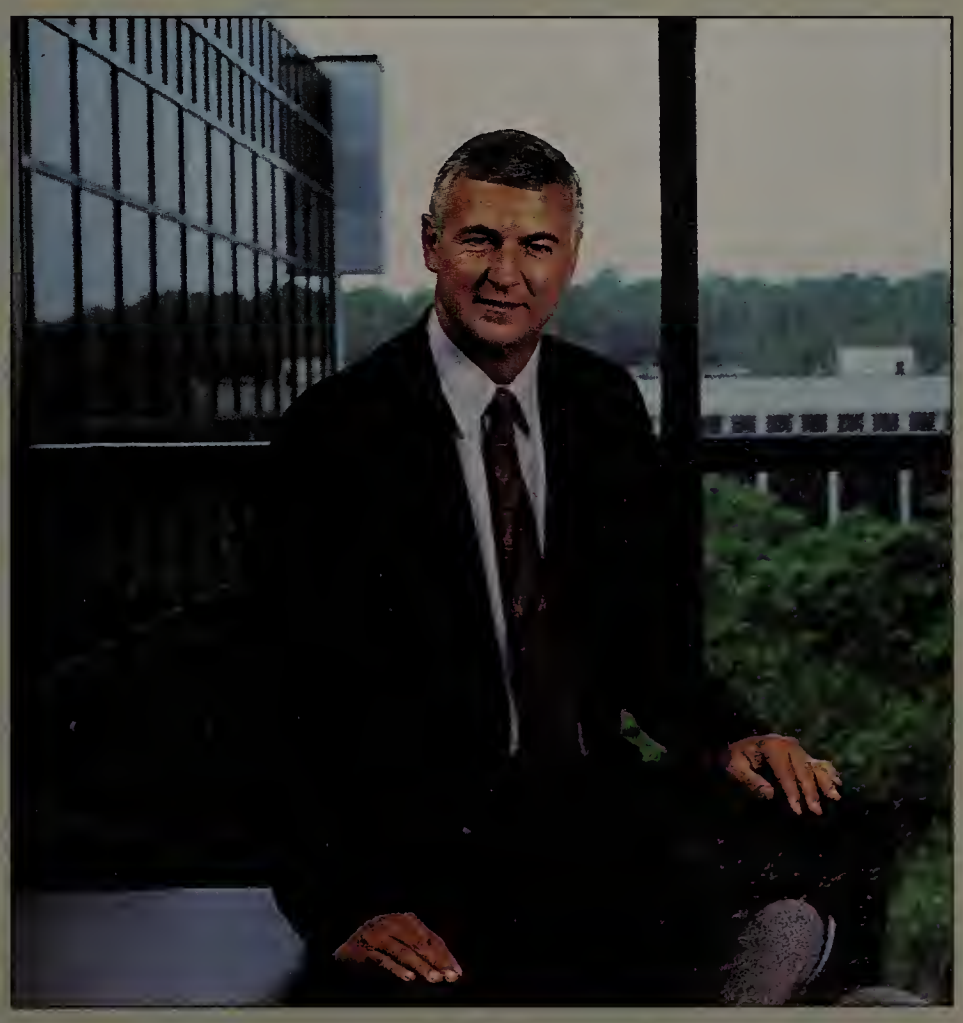
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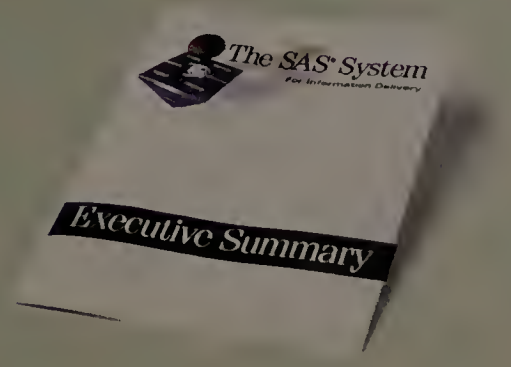
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Workgroups 3.11 preinstalled, HP mouse and keyboard. [1]Source 1994 J.D. Power and Associates PC Customer Satisfaction Study.SM Study conducted among business users and based on 1,528 user

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intel inside
pentium

HP optical jukebox pumps up net capacity

Users hail cost, added capacity, features such as hot-swappable disk drives

By Steve Moore

Buttressing its lead in the optical jukebox market, Hewlett-Packard Co. last week introduced its highest-capacity magneto-optical jukebox to date.

Analysts hailed the added capacity and new features in HP's SureStore Optical 300ST (see box).

"The optical market is relatively slow right now, and this product will help to stimulate demand because of its cost and features," said Patty Chang, a principal analyst at Dataquest, Inc. in San Jose, Calif.

Hot-swappable magnetic disk drive arrays have proved popular among users, and a key new feature of the SureStor 300ST is its on-line drive-replacement capability — a first in optical jukeboxes. "The ability to swap drives without shutting down the library is very attractive to users," Chang noted.

Smooth upgrade

Customers also applauded other new features. "I like the fact that it allows you to put more than one jukebox on a SCSI card because then you only need one controller rather than a controller for every jukebox," said James Albert, MIS director for the city of San Francisco's Department of Building Inspections.



In addition, he noted that HP provides a smooth upgrade path.

"We already have a [HP Model 200T] jukebox that we can upgrade to double-density drives and turn our 200T into a 400T. So we would do that first and later go to a 300ST," he explained. The city plans to have more than a terabyte of on-line storage by the end of next year, he added.

Overdrive

While HP's previous high-end jukebox had four drives, the SureStor 300ST has six drives. An spokesman for the Palo Alto, Calif., company said that feature increases performance, particularly when many users are on the network. The performance boost "will be a benefit to us in the future as more people start to use our network services," Albert said.

Increasing the number of disks in the jukebox also puts more data "under the head" and therefore is beneficial for document management applications, an HP spokesman said.

As next-generation, 2.6G-byte magneto-optical drives become available, HP plans to provide a conversion kit that allows users to upgrade to those larger drives so that a single jukebox can provide 600G bytes of storage.

HP is aiming the SureStor 300ST at data warehousing and document and image management applications, particularly in the financial services, retail and publishing industries.

"HP is the leader in jukeboxes for optical technology," said Stan Corker, an analyst at International Data Corp. in San Diego. He noted that while optical drives are slower than magnetic drives, their ruggedness and reliability make them better than magnetic drives for jukebox applications.

Big byte

The 309.4G-byte SureStore 300ST has six drives and can hold up to 238 1.3G-byte 5¼-in. disks. Its list price is $65,000.

Migration of RAID to client/server environments heats up. See page 47.

What do you call an application that makes phone, fax and e-mail accessible from anywhere?



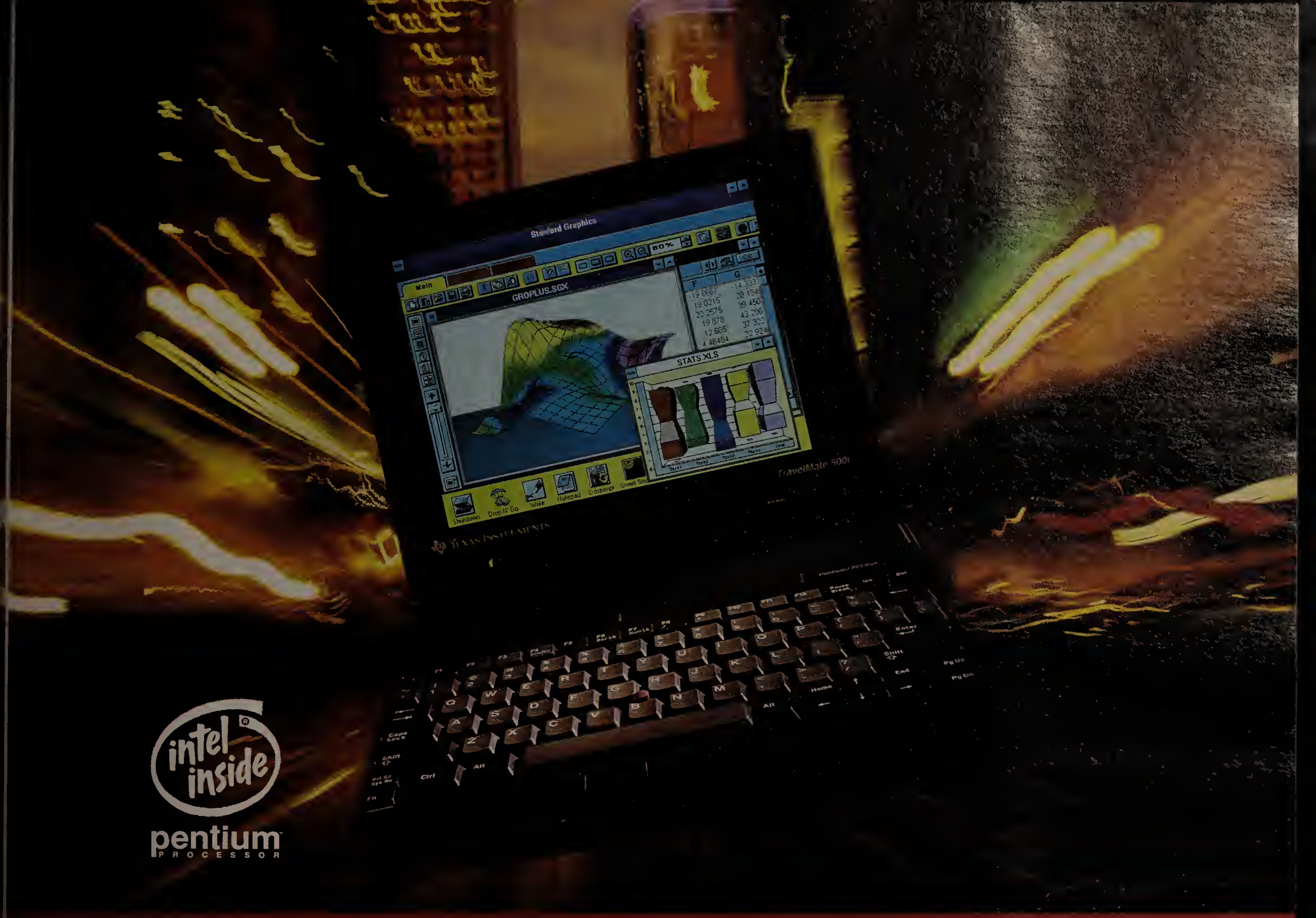
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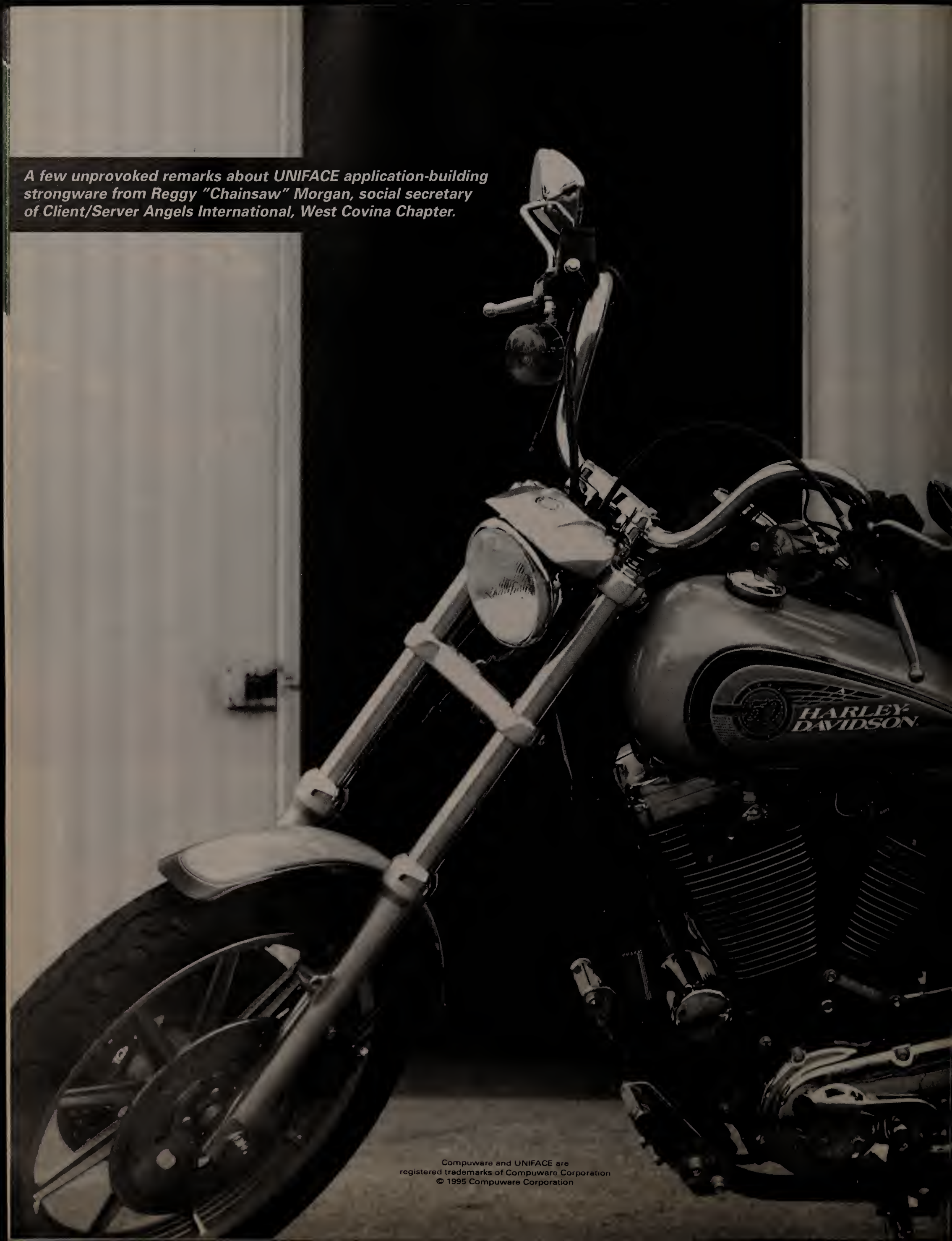
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A few unprovoked remarks about UNIFACE application-building strongware from Reggy "Chainsaw" Morgan, social secretary of Client/Server Angels International, West Covina Chapter.



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WHAT THE BIG GUYS USE

SmartSuite 4.0 gambles on 16-bit nostalgia

By Cheryl Gerber

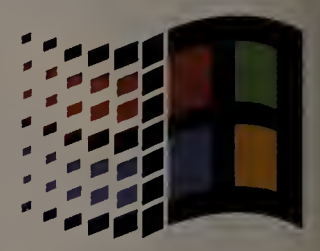
Grasping the tail end of opportunity in its installed base, Lotus Development Corp. recently introduced SmartSuite 4.0 for Windows 3.1, the final revision before the suite's Windows 95 version.

Some compelling new Notes-like features in WordPro, SmartSuite's word processing component, may entice users into making the upgrade despite their anticipation of the upcoming version based on Microsoft Corp.'s Windows 95. But users yawned at other functionality added to the suite.

First Union Corp. in Charlotte, N.C., is weighing whether to make the upgrade to SmartSuite 4.0 or wait until the Windows 95 version emerges this fall.

"We would like not to hang on to another 16-bit application, but there are some compelling team computing features in this version of WordPro that are making us consider it anyway," said Lesa Kastanas, a First Union technology research consultant who is also project manager for the bank's Windows 95 rollout.

She was referring to features such as Versioning, TeamReview, MultiEditor Revision Making and TeamConsolidate. All of these features let users collaborate on shared documents. Also added to WordPro are automatic spell checking and a thorough implementation of LotusScript 3.0 for enhanced programmability.



Two other SmartSuite applications, Organizer 2.1 and ScreenCam 2.0, also provide team collaboration tools. Organizer 2.1 offers LAN-based scheduling and calendaring.

ScreenCam 2.0, the tool for creating PC-based training movies or presentations, now offers captioning, sound compression, editing and Notes/FX integration. For the Lotus installed base who needs compatible versions to work smoothly with one another, the collaborative features in WordPro have made the upgrade a given.

"Even for a short period of time, it'll be worth the return on investment for us to upgrade in order to communicate smoothly with our business associates who also use Lotus software," said Dan Tyre, president of Ali, Inc. in Needham, Mass., a professional services firm. "The team computing features in WordPro are a tremendous added benefit," he added.

Another motivation for Tyre was to delay the cost of retraining staff on Windows 95 or another desktop software program.

He said he also sees the WordPro version as a way to get staff ready for Notes. First Union would like to leverage its installed software before making the huge investment required for the move to Windows 95.

Though First Union plans to use 32-bit applications when it moves to Windows 95, the bank will also use 16-bit applications. "Some of the bank's divisions will be working in a 16-bit vertical application world for two to three more years," Kastanas said.

The Cambridge, Mass.-based Lotus has priced SmartSuite 4.0 at $199 for a shrink-wrapped upgrade and $399 for a shrink-wrapped SmartSuite.

Suite release

Lotus also plans to ship this quarter NotesSuite 2.0, which comprises SmartSuite 4.0, the latest version of Notes, and NotesSuite Application Connection 2.0.

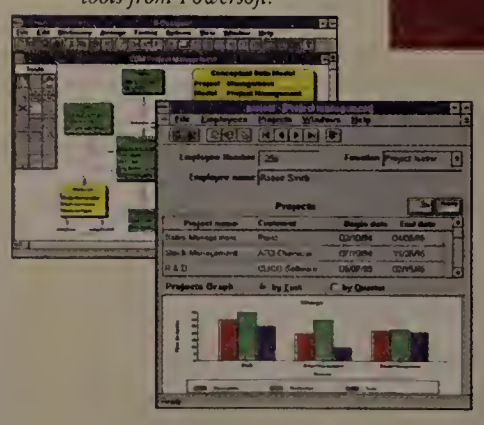
& **Lotus Organizer 2.1** shows improvement over earlier version. See page 40.

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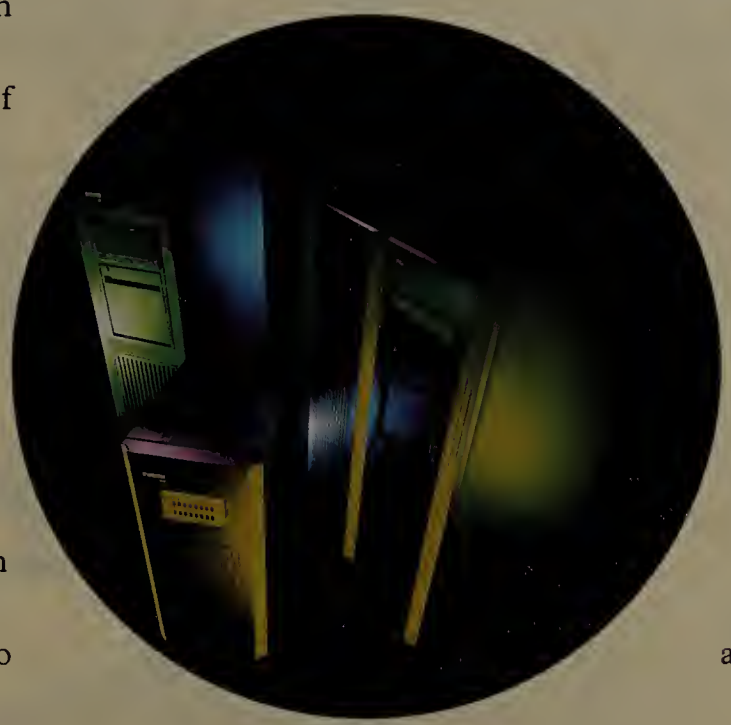
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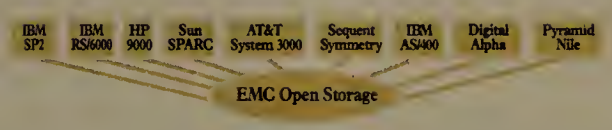
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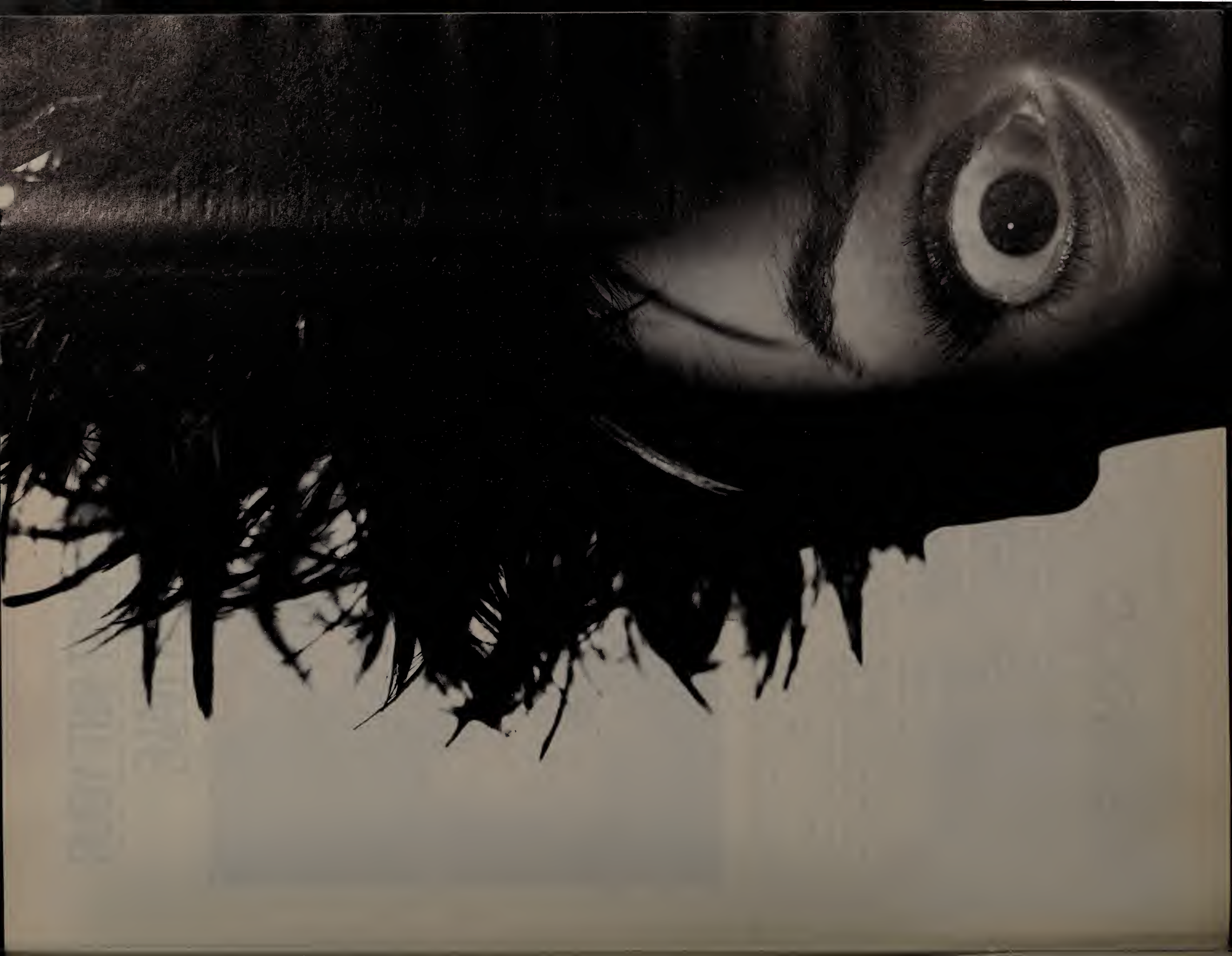
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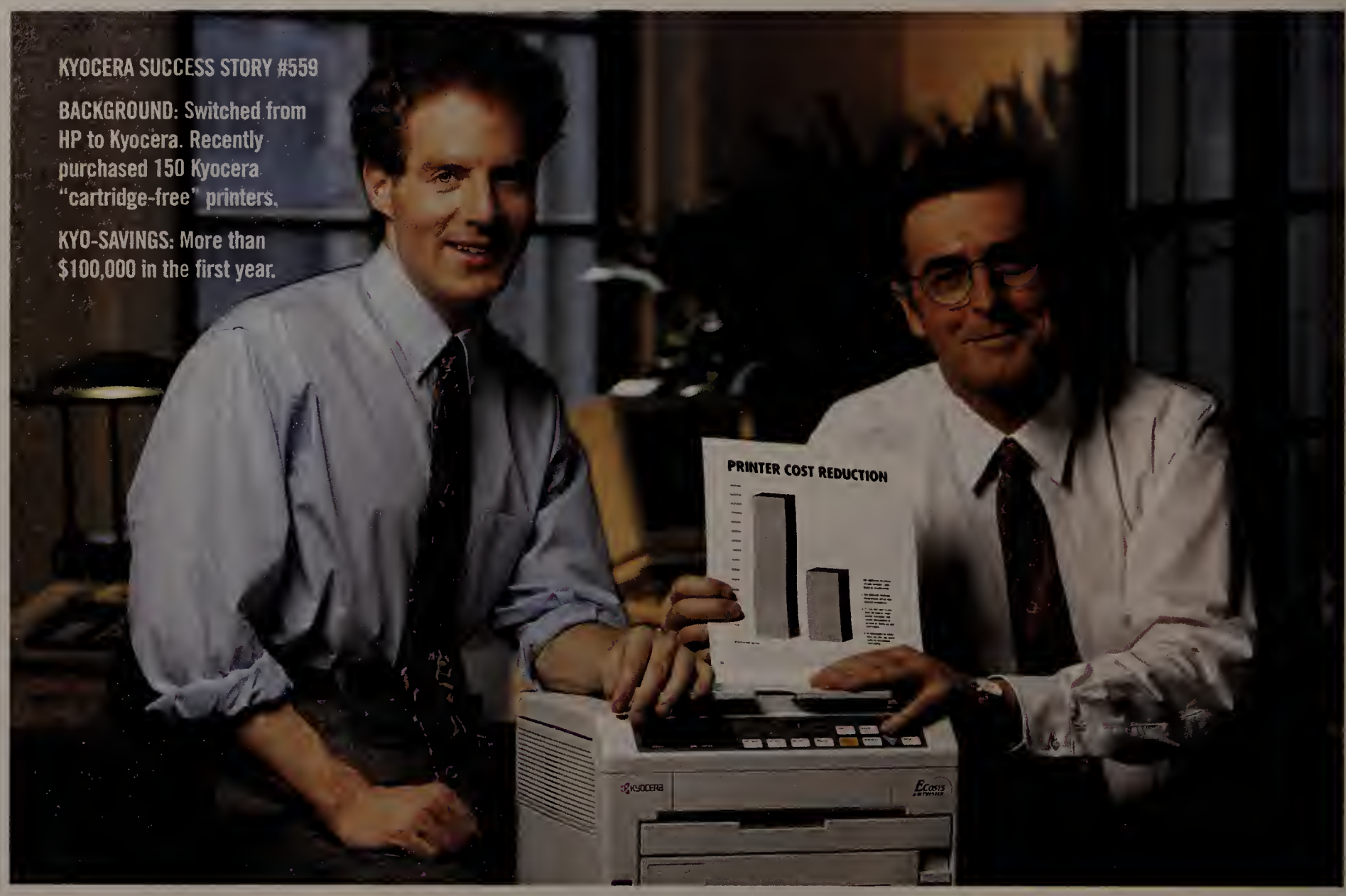
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Banks grapple with user links

By Thomas Hoffman and Ellis Booker

Ask bankers what the Top 3 electronic banking requirements are and they will tell you this: security, security and more security.

But behind the scenes, information systems folks are quietly wrestling with the additional tasks of connecting their banks' disparate legacy systems to front-end customer interfaces, as Internet and PC-based gateways to customer account information begin to creak open.

"Most banks' legacy systems were not designed with the thought of letting outside customers in," said Bruce Valentine, a first vice president at Detroit-based Comerica, Inc.

It can be easier to unify disjointed platforms than to gain cooperation among division executives who, after years of protectionist policy, are being asked to share data with the rest of the bank, according to Kurt Cavano. Cavano is vice president of the New York-based wholesale banking unit at American Management Systems (AMS) in Fairfax, Va.

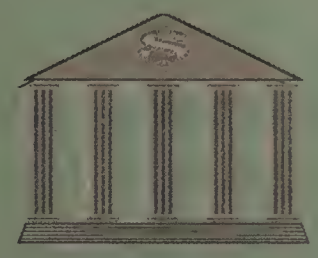
Political issues aside, connectivity issues are paramount. Many banks have tried linking their customers to their legacy systems through a gateway server using point-to-point connections over IBM SNA networks. But that approach usually provides customers with only raw data and a limited view of their account information.

Other banks, such as The Chase Manhattan Bank NA, have begun installing middleware packages such as Early, Cloud & Co.'s Message-Driven processor software to link disparate legacy checking, mortgage and other retail systems to one another and to front-end servers. The servers can then connect the bank with its on-line customers. This strategy was designed to give customers a more complete view of their account histories.

First person

When I heard that Wells Fargo Bank was one of the first banks to let its customers access their accounts over the Internet, I wanted to try it out.

Anyone can visit the bank's World Wide Web page at http://www.wellsfargo.com/. But some options at the well-crafted site are off-limits without special access privileges.



To see current balances in my savings or checking account, for example, I first had to call a toll-free number to create a secret five- to eight-digit password.

Setting up a password was a 26-minute hoop-jumping process to ensure I was who I said I was.

After verifying my Social Security number, address and bank card number, I answered questions such as "What is the last deposit made to this account?" and "How much was your last ATM withdrawal?"

I rifled through my wallet for recent receipts, wondering whether the Wells Fargo agent thought I was an impostor.

The agent then wanted to transfer me to "a secure phone line" to select a password. But I couldn't let her go without a few questions.

The checking and savings information I want to see over the 'net are actually joint accounts with my husband. Doesn't Wells Fargo need his OK for this as well?

Nope.

And just what security measures has the bank deployed anyway?

No one can see account information without supplying a Social Security number and the right password, the agent said. The required Netscape Communications Corp. browser also encrypts the data and provides other security measures, she said.

Plus, customers can change passwords as often as they like.

After choosing and confirming a password, I can immediately view and drill down into my accounts. There is no one-hour waiting period, like when I signed up for *The San Jose Mercury News* on-line. —*Kim S. Nash*

The corporate side

Electronic banking isn't just for consumers.

Detroit-based Comerica last month began rolling out the first pieces of the Comerica Gateway, an electronic interface designed to allow corporate customers to access their account information and pay bills.

Through a partnership with AMS in Fairfax, Va., Comerica is creating a Powersoft Corp. PowerBuilder and C++-generated gateway application that will link customers to Comerica-housed information, according to Bruce Valentine, Comerica's first vice president of corporate product development. Comerica's corporate customers have been able to download data through a rudimentary predecessor system called Comerica Intellect.

To facilitate account access through Comerica Gateway, AMS programmers have written a gateway application in C and C++ that translates and forwards customer information between its Compaq Computer Corp. ProLiant 4000 server firewall and the bank's back-office systems.

Comerica will link the Compaq server with its legacy systems via the gateway application through a variety of networked protocols, including LU6.2, TCP/IP and IPX links.

The bank is testing a wire transfer service with a few customers and plans to begin piloting an on-line balance reporting system in September.

—*Thomas Hoffman*

Differing needs

Nevertheless, each bank seems to be taking a different route toward resolving its on-line connectivity and communications issues. Chemical Banking Corp. customers who use Excel, the bank's homegrown PC banking package, can dial in to the bank's systems and access legacy and client/server-based account information through a Tandem Computers, Inc. gateway server. The Tandem server connects to the disparate back-office systems over an SNA network.

But because most customer account information has been shifted onto client/server systems throughout Chemical's branches, the bank plans to replace its outdated IBM SNA network with an as-yet-undecided frame-relay system next year. "There's diminishing need [for customers] to go to the mainframe [for account information]," said Carl Morales, managing director for Chemical's consumer banking systems and operations in New York.

Checking in

Customers are just starting to bank from home, but it will be a while before banks have fewer people coming through their doors

	1990	1995*	2000*
RETAIL BANKING TRANSACTIONS	9.2B	13B	18.5B
HOME BANKING TRANSACTIONS	NA	50M	112B

*Projected NA - Not applicable

Source: The Tower Group, Wellesley, Mass.

Wells Fargo & Co. recently built a customer cross-reference system that consumers can use to search through a table of contents and click into the database of their choice — whether they want to balance their checking accounts or see how their Individual Retirement Accounts are progressing (see above). The customer cross-reference system was built using Digital Equipment Corp.'s object request broker tools, with C++ as the programming language, said Barry Lynn, executive vice president of the customer information group at the San Francisco-based bank.

The plan is to connect customers to every possible relationship they might have with the bank, according to Lynn. "When a customer comes into Wells Fargo electronically, he wants to be treated like a customer and not like a bunch of different accounts," Lynn said.

Of course, many banks continue to proceed cautiously into the electronic jungle. Banc One Services Corp., the technology and operations arm of Banc One Corp. in Columbus, Ohio, began re-engineering its customer information system more than five years ago with an eye toward on-line networks and real-time processing of data under a joint development project with Electronic Data Systems Corp.

But like many of its brethren, Banc One is taking a careful look at the Internet and its demographics before commiting sizable development resources to create retail banking services through this channel, according to Robert Barrett, executive vice president and chief technology officer at Banc One Services.

Although it has not begun handling cross-Internet transactions itself, Banc One has not been sitting still. In late June, it launched a project with Open Market, Inc. in Cambridge, Mass., and RoweCom, Inc. in Belmont, Mass., a leading service provider to libraries and research institutions, to deliver a procurement system that streamlines the relationship between libraries and publishers.

Web crawlers have a new way to analyze 'net traffic. See page 55.

Lock and key

Digital encryption is only one part of a secure electronic environment in which commercial transactions can take place. Other elements include the following:

- Authentication — Certifying individual or company identity.
- Authorization — Dictating access levels once identity is verified.
- Confidentiality — Maintaining the secrecy of the contents of a transmission.
- Integrity — Guaranteeing that a transmission arrives in exactly the same form in which it was sent.
- Nonrepudiation of origin — Ensuring that when an entity sends an authenticated electronic communication it cannot later deny the origin or contents of the communication, e.g. an electronic credit-card receipt.

SOURCE: A RECENT WHITE PAPER ON DIGITAL SECURITY AND U.S. DIGITAL ENCRYPTION POLICY PUBLISHED BY COMMERCENET IN MENLO PARK, CALIF.

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Antitrust settlement

Legent VSE users call accord weak

By Mitch Betts
and Thomas Hoffman

A so-called mild antitrust settlement that allows Computer Associates International, Inc. to gobble up Legent Corp. has left some mainframe software customers and competitors grumbling that it doesn't go far enough.

The agreement with the Department of Justice requires CA to license, but not divest, five Legent VSE products to one or more vendors to preserve some competition in that market niche [CW, July 31]. Legent VSE customers, meanwhile, can stay with CA/Legent or switch to the new licensee or licensees, depending on which vendors are selected and ratified by the Justice Department to license the software.

"It's better than CA having a pure monopoly in the VSE world," said Larry Moore, president of the Tennessee VSE Users Group and a senior systems programmer at Hamilton County, Tenn.'s data processing department. But Moore and several other users said they would have preferred a full-fledged divestiture.

Sturgis Sobin, a Washington attorney who represents CA/Legent VSE competitor Sterling Software, Inc. in Dallas, also wanted divestiture. "CA has an enormous concentration of market power in VSE products, and the licensing scheme is inadequate," he said.

But Lawrence R. Fullerton, an antitrust official at the Justice Department, defended the settlement at a press briefing last week in Washington. "We're confident that this fix will work. If it doesn't, the court could order a fuller disposition of assets," he said.



No monopoly

In its settlement with CA, the Justice Department has laid out the following three-phase approach to restoring competition in the VSE software arena:

PHASE 1:

CA is required to hire and pay for an investment banker – The Updata Group – to solicit, receive and evaluate bids from other vendors to license Legent products. The results are subject to Justice Department approval.

PHASE 2:

If the investment banker can't find a viable bidder, a court-appointed trustee will try to do so.

PHASE 3:

If the trustee can't find a viable bidder, U.S. District Court Judge Thomas Penfield Jackson will have wide discretion to come up with a remedy. That may include requiring CA to divest the products.

Source: Department of Justice, Washington

Justice ruling

CA had refused to sell the disputed products, so the Justice Department took the middle ground of licensing and got veto power over the licensee. Fullerton said the government prefers that the whole set of products go to a single licensee because customers like vendors with a full line of products.

The settlement covers Legent's Epic/VSE for tape and disk management, FAQS/PCS for VSE job scheduling, Alert/VSE and Alert/CICS security tools and FAQS/ASO for VSE automated operations.

Potential candidates for VSE licenses include Sterling, Landmark Systems Corp. in Vienna, Va., and Macro 4, Inc. in Parsippany, N.J., according to Paul Mason, research manager for enterprise system management at International Data Corp., a market research firm in Framingham, Mass.

"I can't go into details about this, but we will most likely be receiving a packet from CA" regarding the possibility of cross-licensing the Legent VSE products, said Charles Warhaftig, president and chief executive officer of Macro 4.

The U.S. House of Representatives' proposed budget for federal nondefense research and development spending

	Fiscal 1995	Fiscal 2002*	Percent** change
Health and Human Services	$11.7B	$8.8B	–25%
NASA	$9.9B	$6.1B	–38%
Department of Energy	$4B	$2.1B	–47%
National Science Foundation	$2.5B	$2B	–21%
Department of Agriculture	$1.5B	$1B	–35%
Department of Commerce	$1.3B	$642M	–50%
Other R&D	$3.4B	$1.9B	–44%
Total nondefense R&D	$34.3B	$22.5B	–34%

*Projected; adjusted for inflation **Approximation due to rounding

Source: American Association for the Advancement of Science, Washington

Republican ax-wielding budget blunts high-tech support

By Gary H. Anthes
WASHINGTON

When Republican lawmakers swept into power last November, many industry officials cheered. But after nine months of unrelenting attacks on federal technology programs, that enthusiasm has waned.

Putting a damper on things are actions taken in recent weeks by the U.S. House of Representatives — actions that are potentially reversible when the Senate and House meet later this year. House Republicans have aimed the budget ax at several high-tech initiatives as part of an effort to support a Republican pledge to eliminate the budget deficit in seven years. They have so far done the following:

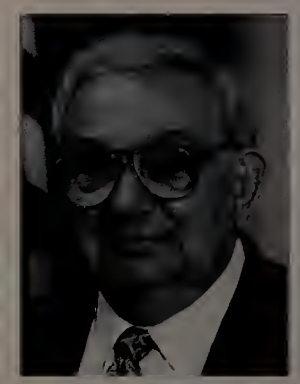
- Eliminated all funding for the Department of Commerce's $341 million Advanced Technology Program (ATP), which provides grants to companies developing basic new technologies.
- Cut $90 million for Sematech, the semiconductor industry's research consortium.
- Slashed major research programs in global climate change at the Environmental Protection Agency and the National Oceanic and Atmospheric Administration.
- Eliminated the program for transferring technology developed at the National Laboratories to the private sector.
- Agreed with Senate budget negotiators to kill the Office of Technology Assessment, Congress' highly regarded, technology think tank.

"A lot of people in the industry are unhappy with their targeting of some of the technology programs," said Mitchell E. Kertzman, chief executive officer of Powersoft Corp., a unit of Sybase, Inc., in Concord, Mass. "The Clinton administration has been the most technology-friendly administration we've had."

Michael Maibach, director of government affairs at Intel Corp., shed no tears for the ATP, saying the government has no business using taxpayer dollars to "pick winners and losers" in the marketplace.

However, Maibach said it is appropriate to fund programs such as Sematech that any company may join and that develop "precompetitive, generic" technologies.

Ken Kay, executive director of the Computer Systems Policy Project (CSPP) in Washington, said the CEOs of the 13 major computer companies in the CSPP didn't believe that government research programs should be immune to budget cuts.



Rep. George E. Brown Jr. *(D-Calif.) says too many cuts have been made to technology programs*

But he said companies are worried that university programs are being unwisely targeted. "Our chief technology officers, in particular, feel that that is the last place that cuts should be made," he said.

Cuts too deep

On the other side of the political aisle, allies of government technology programs anguished last week over cuts to programs they have championed for years. "What bothers me most is whereas we were once No. 1, today the U.S. ranks 28th in the world in terms of the portion of the budget going to civilian R&D," said Rep. George E. Brown Jr. (D-Calif.), who was chairman of the House Science Committee until last November.

Brown said he hasn't seen an organized effort by the industry to lobby for programs such as the ATP. "The community has got to get its act together," he said. "They are not weighing in to complain about cuts in R&D programs."

Maibach said the pain of budget cuts will have been worth it if the Republicans prevail with a plan that really eliminates the deficit in seven years. "If they win the battle this fall, I think they are on a trajectory to really help the stock market and the investment climate," he said. "But if they blink, and it's business as usual on the budget, then all of this other stuff is not important."

Driving the Transition to a Flexible IT Enterprise

A Guide for Business and IT Managers

Overview by the

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The Transition to a Flexible IT Architecture

Beyond the Limitations of Legacy Systems

As information technology evolves, virtually every organization is feeling pain from its existing IT resources. Application backlogs are growing. IT operating costs continue to climb. Data on mainframes and proprietary midrange systems is often inaccessible. New product lines — being introduced at ever increasing rates — must be supported. And organizations are continually being challenged to do more with less.

Realizing that proprietary architectures cannot sustain a company's competitive edge, corporations have begun to search for more flexible and responsive IT environments. The result is that open systems and client/server architectures have emerged as the foundation of a more flexible IT architecture. Introducing new technologies into existing legacy environments is now the primary challenge of many IT managers.

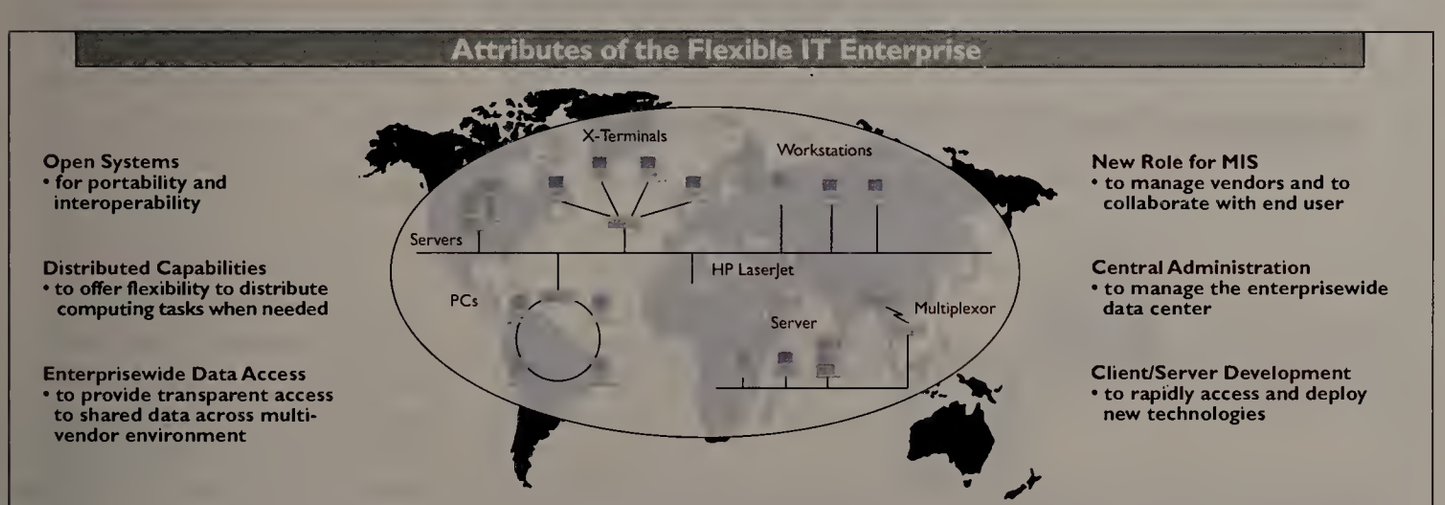
Organizations are recognizing the need to transition to client/server, but the transition involves risks. How can an MIS manager ensure that systems, PCs, peripherals, interfaces and development tools will work well together once deployed in a client/server model? How can IT personnel be trained for a new skill set, given that their roles and responsibilities may change during the transition? And how can an organization transform a rigid pre-defined IT architecture that imposes limitations on business processes to a flexible, adaptable IT architecture that supports true re-engineering of business processes?

More Than Technology. Addressing this challenge requires a new view of IT — one that includes not only technology solutions, but also the solutions to the equally critical people and process issues that are part of this transition.

Experienced Transition Advisors

To manage such complexity and minimize the risks requires a comprehensive understanding of the significant changes required in processes, people and technologies. Hewlett-Packard Company has developed this knowledge first-hand.

HP, ranked 22nd in the Fortune 500, has helped thousands of companies



worldwide transition from proprietary mainframe and midrange platforms to open systems-based client/server architectures.

HP's Mainframe Elimination. HP understands the issues involved because it has been down a similar path itself. The company is driving its own internal mainframe elimination project. For over 30 years the company had large legacy applications deeply entwined within an IBM mainframe architecture.

By 1992 HP had eliminated all but two of its production mainframe data centers. And HP anticipates that by the first quarter of 1996, it will be the largest company in the world to be running its business without traditional mainframes.

The business and technical issues that HP faced in migrating from its own mainframes to more cost-effective, flexible open-systems platforms are the same ones that many other companies are facing.

To address these issues, HP has developed a complete portfolio of services and products to enable a smooth transition for the processes, people and technologies that comprise IT.

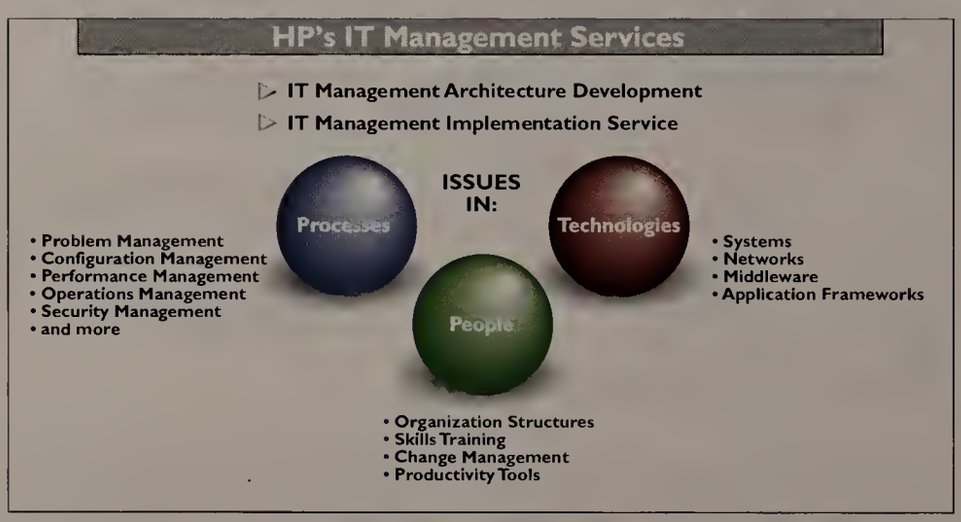
Transition Technologies

HP has built a technology foundation supporting the transition from proprietary architectures to open client/server. This foundation begins with the superior performance and scalability of the HP 9000 server, in configurations appropriate for departments or workgroups to data centers.

HP also supports the key applications, multivendor systems, networks and peripherals used in legacy environments. For managing across the IT enterprise, HP developed the industry's leading technology framework, HP OpenView. HP OpenView provides the comprehensive set of management tools, including those offered by the industry's leading software vendors.

Transition Services

Planning, project management and implementation are key elements of a successful IT transition. Experienced consultants can be enormously useful in guiding an organization through an already proven process that addresses each stage of change. HP has provided this guidance for thousands of companies worldwide.



HP's Transition Services Methodology leads organizations through a process to identify business problems and requirements, establish clear goals, evaluate technology options, and finally choose and implement a solution. HP's experience is evident in the kind of questions the consultants know to ask, in the resulting analysis which benchmarks an organization against HP's experience with other companies, and in HP's understanding of the transition process and its recommendations for mitigating transition risk.

Hewlett-Packard is driving its own internal mainframe elimination program. By 1992 HP had eliminated all but two production mainframe data centers. And by the first quarter of 1996, HP expects to be the largest company in the world running its business without traditional mainframes.

Education. To transition people's skills, HP offers an educational assessment service to help define training needs at the outset of the transition and to develop a training plan that takes into account the current proprietary-based skills, providing a bridge from the old to the new.

Software Solutions to Match Different Strategies

Moving Existing Applications. HP's relationships with software providers are a key element of transition success. Some organizations that have offloaded their host-based systems have chosen to convert or transfer their existing applications to Unix. HP offers a full range of conversion tools and traditional mainframe applications to aid in the transition without replacing the applications or existing user interfaces.

Implementing Re-engineered Applica-

tions. Many other organizations, wanting new application functionality, have chosen to replace outdated applications with new and improved packaged software developed on Unix systems. SAP, for one, has been very successful with its R/3 business applications written specifically for open systems client/server architectures, and HP is the leading platform for R/3.

Developing Customized Applications. Another offload strategy is to build highly customized, mission-critical applications in-house by using one of the new advanced development tools. Industry analysts predict that the demand for enterprise-based client/server development tools will explode over the next three years. Antares Alliance Group's ObjectStar enables portions of existing, complex code to be redeveloped for client/server and Dynasty's 4GL products bring new rapid application development capabilities to this emerging market segment. Leaders in the marketplace for traditional client/server development tools, such as Texas Instruments with Composer by IEF and Seer Technologies with HPS, also are expanding into the market for enterprise-based development solutions.

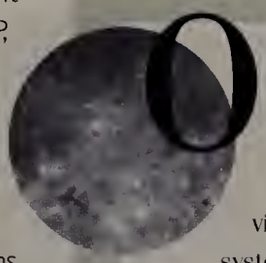
Summary

Effective IT management today demands a flexible, open environment that can guarantee the availability of mission-critical applications, databases, systems and networks. Organizations seeking to remain competitive are driving the transition from proprietary, centralized, often mainframe-based architectures to distributed client/server.

Yet that transition carries with it inherent complexities and risks. Based on the experience of thousands of customers worldwide who have successfully made the transition, its own mainframe offloading project, and a comprehensive portfolio of products and services, HP is in the best position to help reduce the complexities and risks involved in migrating.

By focusing not just on technology, but also on the IT processes and people skills, HP is prepared to guide organizations to a flexible IT enterprise.•

Rolling Out Enterprisewide Client/Server



One organization where Hewlett Packard is working alongside both the IT and business unit managers to ensure a smooth transition is Chevron Corp. HP is helping Chevron implement a worldwide rollout of SAP's R/3 financial applications. HP is providing systems for all three tiers of SAP's R/3 solution, and open systems training, consulting and support services.

HP's Professional Services Organization (PSO) has been working with Chevron to deploy HP OpenView as Chevron's enterprise network and systems management platform. Chevron's legacy environment, as well as the new SAP application on HP open systems, can both be managed centrally using HP Operations Center, a key component of HP OpenView. This is possible because HP OpenView is integrated with Paradigm/XP, from Computer Associates/Legent Corp., as well as SAP's Computing Center Management System.

Success in Re-Engineering Business Processes

Another realworld example involved the supporting of re-engineered business processes. In this instance, HP's PSO assisted Tokio Marine & Fire Insurance Co. Ltd. of Tokyo in changing its IT infrastructure. The reason for the change was that Tokio Marine wanted to support more efficient processing of its property and casualty insurance data. With processing volume at more than 700,000 transactions per day, the typical 10-second inquiry response time of the mainframe-based system was too slow.

HP's consultants worked with the company to design, manage and implement a project to install an open, standards-based communication backbone to handle the requirements of the re-engineered, large-scale online transaction system.

The results of this implementation are a significant improvement in response time (greater than 50%), a system that is dramatically easier to learn and use, and, most importantly, a communication backbone that will enable Tokio Marine to continue its migration from mainframes to more economical servers in the future.

BY MARC BUTLEIN, META GROUP

IT Management Must Drive the Transition

Reflecting a more competitive market, enterprises are redefining themselves, changing their infrastructures to focus on providing top-quality service to customers. Although nearly every aspect of a business has been affected, the most profound impact is on the IT organization, because this change is occurring as IT evolves from a hierarchical, mainframe-centric environment to an enterprise-centric one.

IT is also evolving from an independent "internal monopoly" to a service organization competing for end-user business. The objective of the newly defined IT is to partner with end users to focus on the enterprise's customers; its overall responsibility is to transform technological complexity into strategic business advantage and facilitate change.

To manage this transition requires a mind-set and cultural change from three constituencies: end-user departments, IT and senior management. Each group must be educated about its new role. End users are typically the most amenable to change, IT the most resistant, because as the most entrenched, it stands to lose the most power. The most sensitive challenge is senior management, which now must involve itself more in IT direction.

IT should focus on six areas:

1. Marketing IT services and value. As IT becomes more service-oriented, it must proactively market its services to end users, assessing its effectiveness via ongoing user feedback.

2. Integrating IT into the business units. The goal is to create an IT/end-user team focusing on better servicing customers. Programs to improve interpersonal skills will be augmented by hiring non-traditional IT personnel with strong communications skills, who will be charged with identifying opportunities and ensuring user satisfaction.

3. Creating, managing and sustaining an environment of change. Effecting change in today's IT organization underlies every major IT initiative. Complications arising from managing change across increasingly broader geographical boundaries, maintaining service levels, and coordinating enterprisewide IT changes (when business units are in different growth stages) are key challenges. IT must handle those who resist change, in part by creating programs that reward behavioral changes.

4. Reorganizing IT to the new organization paradigm. Users' increased power necessitates an IT governing body comprised of heads of business units. This group is responsible for enterprisewide IT strategy, endorsing policies, guidelines and standards, and evaluating the risk/reward of IT initiatives. Once this organization is functioning, enterprises evolve to an "insourcing" paradigm, where IT competes for departmental business with outside vendors and service providers.

5. Managing enterprise expectations of IT through ongoing education. One of IT's responsibilities is educating its customers/end users so they have realistic expectations of IT, can assist in exploiting new technologies, and can better resist the misinformation promulgated by self-serving vendors and overly simplistic media articles.

6. Re-engineering IT's human resource management. To make the transition to the new enterprise, IT will need to attract and motivate a new breed of IT professional: technically astute (in Unix/open systems computing, client/server architectures and networking); able to manage projects in cross-functional environments; adept in communicating with customers, employees, and senior management: and able to apply changing technology rapidly to business needs.

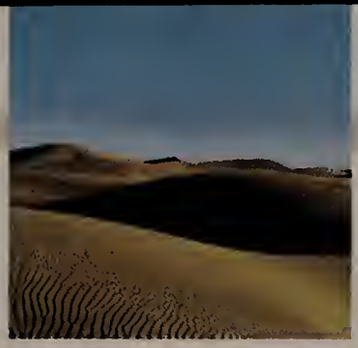
Bottom Line

Effective IT management in the 1990s requires recognizing the new order and IT's changing role — its scope is now the enterprise; its focus is bringing value to the business and architecting change. The objective is IT/business integration, with IT measured on its role in improving business processes, customer service, and, ultimately, profits. •



Marc Butlein is chairman and co-founder of META Group and executive director of the *META Executive Council*.

Mr. Butlein is an authority on IBM, the large systems marketplace, and the IT challenges facing large users. He has over 29 years of experience in the industry and has lectured extensively in the U.S., Canada, and Europe. Prior to co-founding META Group in January 1989, Mr. Butlein spent 19 years with IBM, where he held various marketing, development, and corporate positions, and six years in the market analysis and assessment industry.



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Facing radical changes in the agribusiness environment due to deregulation and globalization, United Grain Growers decided to update its multi-site grain elevator computing system in 1992 to improve customer service, efficiency and timeliness of information.

After obtaining proposals from several vendors, United Grain selected Hewlett-Packard's HP 9000 Unix-based business servers as the foundation for its new system.

In 1993, during the period in which the grain elevator system migration was underway, United Grain began a restructuring that was necessary for it to become a publicly traded corporation. In response to demands from management for easier access to financial information and more reporting flexibility, the company also decided to move from its mainframe-based computing system to a client/server environment. Impressed with HP's technologies and pleased with its level of support on the elevator computing project, United Grain selected HP for this second project as well.

The new systems have positioned the company to respond to continuing industry changes, and streamlined internal operations.

The first project involved the replacement of aging equipment from Digital Equipment Corp. that had been put in place in multiple sites.

Project 1 DEC Replacement Project at Multiple Grain Elevator Sites

Multi-user HP 9000 systems streamline grain-handling process. In the early 1980s, United Grain installed a DEC PDP 11 minicomputer in each grain elevator to print receipts, sales slips, checks and storage tickets; maintain inventory records; and track grain shipments.

Each PDP 11 minicomputer communicated via modem with the head office mainframe (an IBM ES9000/9121) several times a day, uploading business transactions and downloading commodity prices as well as shipping instructions.

United Grain wanted to move to a multiuser system with a database that elevator managers could browse for farm products, prices and delivery dates. Also required in the multiuser system were online communications capabilities that could speed the flow of information between headquarters and the elevators. But the PDP 11 minicomputers presented an obstacle to these enhancements because they could not be updated to provide the required functionality.

In January 1992, Guy Wood, United Grain's managing director of MIS, invited three vendors — DEC, IBM and HP — to learn about his company's business and to propose a solution to meet its changing needs.

United Grain Chooses Complete Business Solution

According to Wood, "HP was the only vendor to present a total business solution, including third-party software, financing, systems integration and training. They not only met our technical and price requirements, and supported our future direction, but they also proposed taking full responsibility for the project, including conversion. They committed to our schedule and were confident about their ability to implement their solution, which raised our comfort level."

Because United Grain wanted to get the new grain elevator system up and running over a winter season during the industry's slow period, timing of the conversion was critical. HP was selected in August 1992 and successfully completed the project on schedule by February 1994. As part of the transition, consultants from HP's Professional Services Organization (PSO) converted half a million lines of macro assembler code to the new platform.

Productivity Raised, Support Costs Lowered

Although United Grain is just starting to use the new grain elevator platform, it has already reaped benefits. Because the platform enables users to perform a range of functions simultaneously, productivity at the elevator sites has doubled, pleasing elevator managers and customers. "Our customers used

Most companies give you one type of database. Which is great if you only have one type of user.

Today's users come in all shapes and sizes. Funny how most vendors' databases don't.

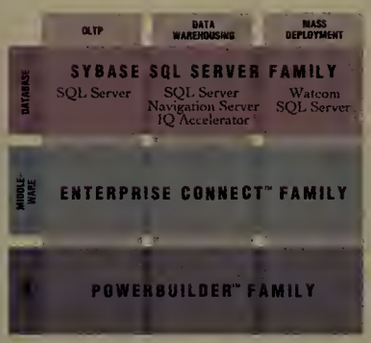
Instead, they simply offer a one-size-fits-all solution. Which, in reality, fits very few.

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to wait an average of 20 minutes for grain receipts," Wood said. "They've been pleasantly surprised to receive their documentation in seconds."

And with fewer hardware problems, United Grain's support costs have dropped dramatically. The company has been able to reassign two of the four developers formerly responsible for system maintenance.

The new platform also allows instantaneous, transparent communications between headquarters and the elevators. In the past, each time headquarters transmitted the latest commodity prices to the elevators, the system shut down for 20 minutes. Now the satellite systems can transmit prices without interrupting operations.

With the new platform in place, United Grain is redesigning other related systems. "By the time we're finished, we'll have a completely new system with data accessible throughout our entire network and online communications that permit immediate information exchange," said Wood.

Project 2 Mainframe Alternative for Corporate Computing

In 1993, as a publicly traded corporation with responsibilities to stockholders, United Grain faced increasing pressure to operate more cost-effectively. This required up-to-date information and better ways of measuring performance. Rather than renegotiate the lease on its IBM ES9000 mainframe, United Grain decided to move ahead with a project that had long been considered: to migrate its mainframe-based corporate computing systems, including finance, marketing, inventory management and sales processing, to a cluster of Unix servers.

United Grain replaced its mainframe with six midrange HP 9000 business servers — including one for backup. Over 350 people in 15 locations now access the servers through Windows-based PCs over a frame-relay network. Since United Grain had been gradually replacing its terminals over time, most users already had personal computers.

Migrating To The New Environment

One critical goal of the migration was to move to a financial system that would offer better access to financial information and greater reporting flexibility. As a mainframe customer, United Grain had developed a strong relationship with Dun & Brandstreet Software, and therefore became one of the first customers of the company's new SmartStream client/server financial solution.

The project also required porting the company's remaining mainframe applications, which included Software AG's Adabas DBMS and applications written in Natural, RPG, PL/1, and macro assembler languages, to the new Unix environment. United Grain ported the Software AG applications directly and, with HP's Professional Services Organization assisting, rewrote the remaining applications in Natural.

For network administration, United Grain uses HP OpenView Network Node Manager, which optimizes monitoring and control and reduces downtime and network and system underuse. For job scheduling, the company uses Unison Maestro workload management software.

"The biggest challenge we faced in migrating from the mainframe was the timeframe," said Terry Light, manager of systems development for United Grain. "We started the conversion in February 1994, with the objective of completing the migration before the mainframe lease expired at year-end. We beat the deadline by a full month."

Over a 12-month period, 16 mission-critical applications were converted, including 10,000 Natural objects such as programs, sub-programs and maps. "We couldn't have met our deadline without HP's PSO," stated Light. "With the size and scope of this migration and our lack of client/server knowledge, we needed their assistance in managing the project, training our staff, and running interference on problems and questions."



"Defining a new architecture for decision support involves more than development tools. It also means understanding a company's business processes and objectives."

Guy Wood, managing director of MIS, United Grain Growers

New System Meets Requirements, Cuts Costs

Although United Grain's main goal was to improve functionality rather than reduce costs, Wood estimates that the new system is saving the company about $1 million a year — roughly 20% of its annual information systems cost. This estimate is based on a projection of expenditures to service the increasing demands of users if the mainframe had been retained, including costs for

Continued on page 22



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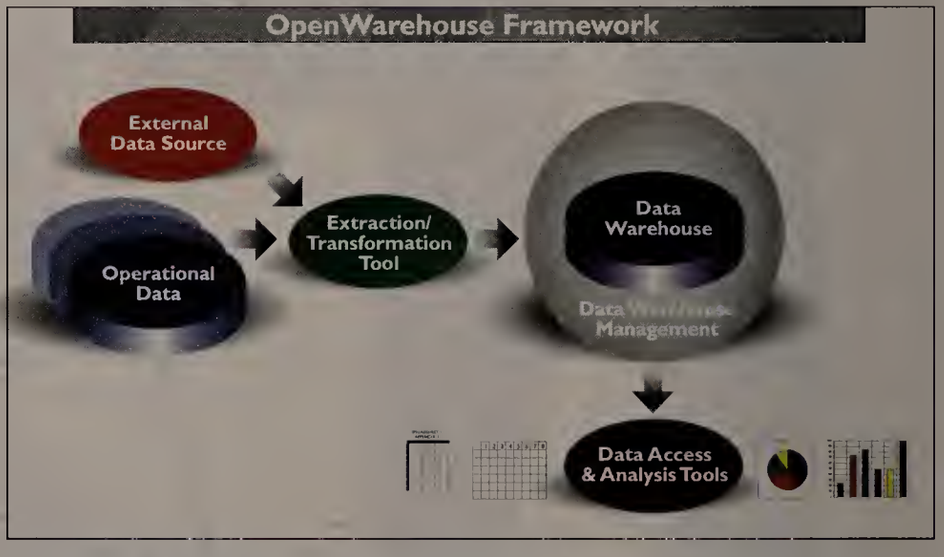
Defining A New Architecture for Decision Support

Flexibility Vital to Achieve Competitive Advantage

Today's fast-paced, global business marketplace demands that companies react quickly to changing market conditions.

However, IT organizations that depend on proprietary architectures to provide them with realtime information about their business are often hard-pressed to meet those criteria. Not only does vital data frequently seem to be "locked up" on mainframe and proprietary midrange architectures, but delays in processing also often render information meaningless when it finally does arrive.

Implementing decision support and data warehousing solutions on open systems platforms which surround, or coexist with, the mainframe can provide the flexibility required in today's business environment. Companies have improved the timeliness of information retrieval, been better able to support new lines of business, and made more informed decisions about distribution, pricing and new product development. Implementing decision support applications on open systems platforms brings new functionality to end users. It also gives MIS the opportunity to work with open systems without getting involved in the complex process of moving mission-critical, transaction processing applications off the mainframe.



HP OpenWarehouse provides the framework for delivering complete data warehousing solutions through a range of hardware and software products and consulting methodologies.

Data Warehousing

In the past couple of years, the concept of data warehousing has found broad industry acceptance as a solution for decision support. A data warehouse is a specialized decision support database, taken from a variety of operational sources and then "scrubbed" to eliminate any inconsistencies or errors.

Because the data warehouse is a separate database, access to it does not impact operational systems. Knowledge workers receive immediate value from the data warehouse through using a variety of access and analysis tools to create general purpose reports, to perform ad hoc queries and to drill down into more detailed layers of data.

Hewlett-Packard has been a pioneer in creating cost-effective, efficient solutions for data warehousing. HP has experience in creating a centralized, enterprisewide data warehouse for its own executives, marketing and sales personnel, and has worked with more than 100 data warehousing projects in a cross-section of industries.

Based on that experience, HP has developed practices and methodologies, as well as a set of tools to enable organizations to make better use of data warehousing in an efficient implementation process.

HP OpenWarehouse Framework. At the core of HP's decision support implementations is the program known as HP OpenWarehouse. HP OpenWarehouse provides the framework for the company's ability to deliver complete data warehousing solutions through a range of hardware and software products and consulting methodologies. The components of HP's OpenWarehouse are designed to rapidly translate user requirements into fully functioning data warehouses that help companies achieve their business objectives.

HP OpenWarehouse solutions can handle databases of a few gigabytes on a single processor server to databases of multiple terabytes on clustered server environments. HP's framework is unique in that it allows customers to plug in the specific RDBMS and data warehouse tools that best fit their specific business requirements.

In addition, HP has strong technical and marketing relationships with the major providers of data warehouse components, including suppliers of extraction/transformation tools, database management environments, and data access and analysis tools.

HP Intelligent Warehouse. To address customer concerns about data warehouse manageability and usability, HP has developed the HP Intelligent Warehouse data warehouse management software. Intelligent Warehouse consists of open middleware together with administrative tools to help administrators manage, tune and handle security in data warehouse environments.

Intelligent Warehouse also provides greater ease of use for end users through centrally managed business views that can be used by most ODBC-compliant data access tools and many OLAP (on-line analytical processing) tools. In enterprise configurations, Intelligent Warehouse can play an even larger role as a unifying backbone for enterprise decision support systems with both data and metadata integration.

Consulting Services. Defining a new architecture for decision support involves more than making use of development and management tools. It also requires the understanding of a company's business processes and objectives. HP's consulting services are designed with that in mind, ranging from simple technology and expertise transfer to full systems integration with HP assuming prime responsibility.

For a company partnering with HP, the path to a successful implementation typically consists of a scoping engagement followed by rollouts of the phases of a data warehouse project. The scoping engagement analyzes business objectives, user requirements, the operational environment and the target architecture requirements and delivers architecture recommendations. The subsequent rollout phases demonstrate the business value of the warehouse, integrate it into the organization's existing systems, and finally expand its role into an enterprisewide resource.

"To build medium- to large-scale data warehouses, IT must engage the services of a competent integrator. With both a capable consulting staff and innovative data warehousing software, HP should be on IT's short list for data warehouse implementations."

December 30, 1994 Application Development Strategies report, Meta Group

Successful Pilot Earns Worldwide Rollout

Successful decision support architectures reap immediate benefits. In one case, a global consumer packaged goods company had spent a year trying to implement a proprietary decision support system on an IBM 3090 before giving up on the mainframe as too slow and too expensive.

HP implemented a solution based on an open, client/server architecture with HP 9000 servers and standard Microsoft Windows clients. Data was extracted on a regular basis from the operational databases on an IBM mainframe and integrated with point-of-sale and retail-inventory data in an Oracle RDBMS on the HP 9000 server. A sec-

IT Drivers for Decision Support on Open Systems

IT Drivers	Technology Trends
• Use less costly computing resources	• Rightsize to mainframe alternative platforms
• Provide flexible environments which accommodate changing market conditions	• Migrate to open systems taking advantage of new client-server applications
• Preserve stability of current mission critical systems	• Migrate decision support applications to open systems and thus "test the waters"
• Release data from the glass house "jail"	• Develop data warehouses; growing market of sophisticated, easy-to-use decision support tools for end users

ond server further summarized the data for analysis purposes.

The results of the implementation showed a dramatic 30% to 40% decrease in the time that the company's employees spent searching for information. Reports that previously took two weeks or more to produce manually became available on-line in less than a minute.

Defining a new architecture for decision support involves more than making use of development and management tools. It also requires the understanding of a company's business processes and objectives.

Based on the success of the original pilot, the company has deployed full-scale data warehouses in two countries and plans to expand its implementation to encompass additional business units worldwide.

Summary

Implementing a decision support application on open systems can provide the flexibility needed in today's business environment. Defining a new architecture for decision support involves more than an understanding of the databases and tools that best serve the needs of a company. It also involves a thorough understanding of a company's business processes and the ability to provide flexible solutions.

Through its success in rearchitecting its own decision support system, its OpenWarehouse solutions framework, and its partnerships with data warehouse component suppliers, HP is prepared to offer cost-effective, efficient decision support solutions that will grow with a company's needs.•

Dun & Bradstreet Information Services Builds Data Warehouse with SAS System



Dun & Bradstreet Information Services (DBIS) is the world's leading supplier of risk management, credit and marketing information, and decision support services for business customers. In the past five years, DBIS has significantly changed its marketing strategy and subsequently delivered a number of new products and services including portfolio-risk-analysis and database-marketing services. During this same period, DBIS was asked to reduce IS costs by offloading their processing from the mainframe.

Before the downsizing, many requests for information about customers' accounts took at least one day to process, including several hours of programming time. SAS Institute utilities running on the mainframe were used to bring together data from various files, manipulate the data and derive new information tables. Not only was this process highly time-consuming, but the staff also experienced problems in obtaining processing time on the mainframe.

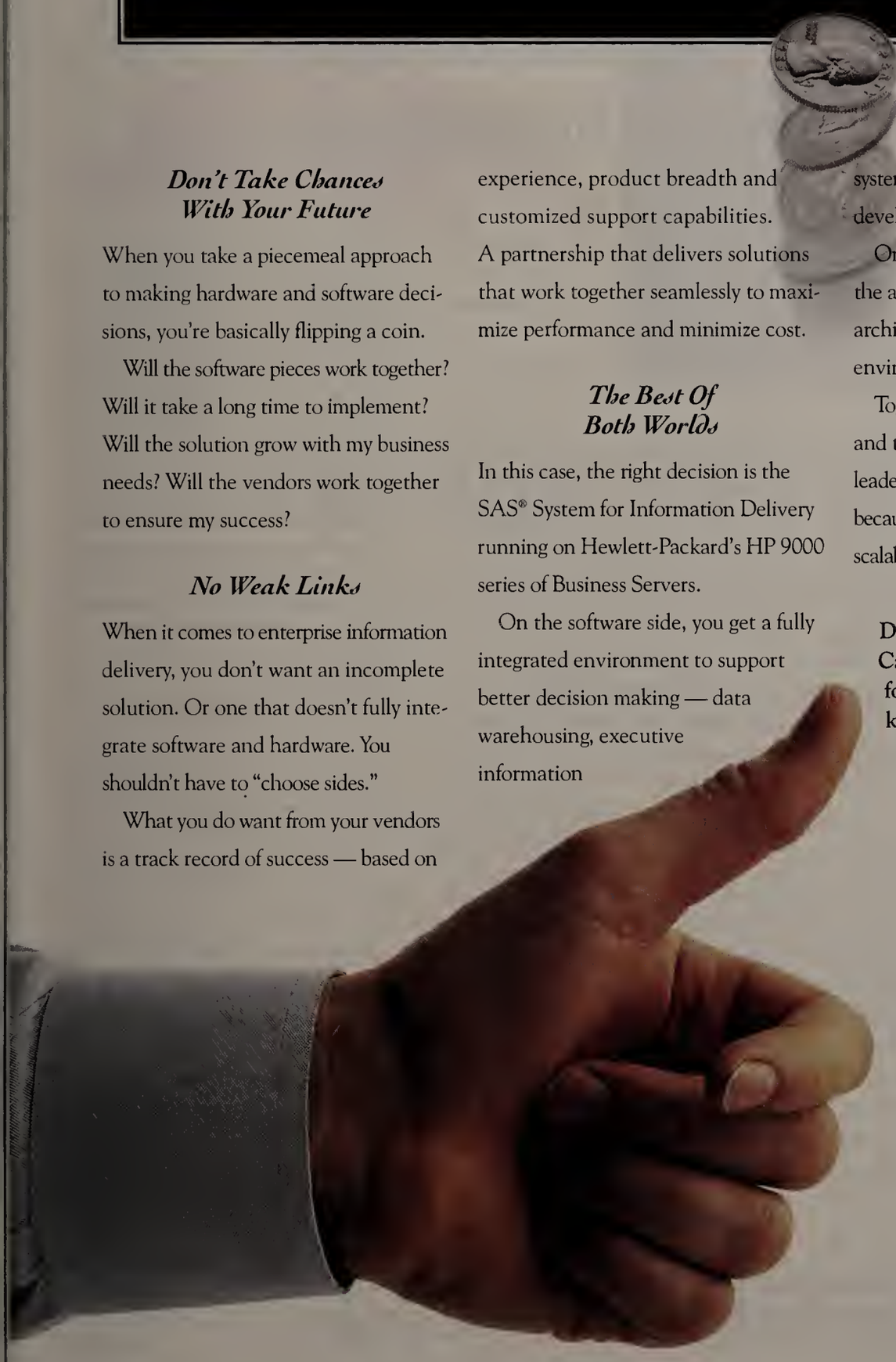
The solution that DBIS implemented was to build a data warehouse on an HP 9000 Unix-based platform using the SAS System tools they were familiar with, and to dedicate the system to processing customer information requests. With SAS on the HP server, the total time to download data from the mainframe, and to build and index the warehouse is 11 hours. The programming staff uses SAS System modules to interface with the data warehouse. Fulfilling customer requests is now a one-step process, typically taking several hours, instead of several days. With a dedicated processor, obtaining computer resources is no longer a problem. The data warehouse project took approximately one year from evaluation to creation, plus another six months of testing and tuning.

Not only did the HP/SAS System data warehouse solution speed things up, it has proven to be flexible as well. "The data warehouse continues to grow — it is not a static entity," said Karen Grippo, senior application consultant for DBIS. "It is constantly changing as we load more and more data down to the HP system."

The HP/SAS solution has had a positive effect on DBIS' bottom line. "The major benefit has been to decrease the turnaround time so we can provide much quicker response to customers," said Grippo. "These new services generated significant new revenue in their initial release. HP and SAS continue to allow us to grow in the future."

Added Grippo: "Specifically in the area of client/server computing, HP and SAS allow us to move the power closer to the customer — and that is our goal."

Decisions Are a Lot Easier When You Don't Have To Choose Sides.



Don't Take Chances With Your Future

When you take a piecemeal approach to making hardware and software decisions, you're basically flipping a coin.

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GE Appliances Builds a Flexible IT Environment

GE Appliances, a $6 billion division of GE Corp., manufactures a wide variety of major home appliances, and employs some 23,000 people.

GE Appliances has a reputation within GE for being very experienced and knowledgeable about client/server architectures, even hosting "best practices" sessions to share its growing expertise. All this knowledge has been earned in a relatively short period of time as GE Appliances transformed itself from an organization heavily dependent on Bull and IBM-compatible mainframes and proprietary mid-range systems to an organization leveraging the power of client/server in a multi-platform environment.

Transition to Client/Server

Before the transition to client/server, the data needed for decision support was not readily accessible, was sometimes unreliable, and was expensive to gather and display using mainframe resources. Then a decision was made to move off the mainframe, and the IT organization began to look at reengineering its decision support systems as a first step in its mainframe offload.

Now, little more than two years later, the company has moved full-force into client/server. More than 50 HP 9000 systems run more than a terabyte of operational and decision support data, primarily with a leading RDBMS in a Unix environment. At the heart of this transformation is GE Appliances' emphasis on defining a new architecture for decision support.

"Originally we only thought offloading the mainframes to a client/server architecture would offer cost savings, but along the way we discovered that client/server was also the solution to many of the limitations we faced in our decision support systems," said Stephen G. Crone, process leader for information warehousing.

Implementing a Data Warehouse

GE Appliances based its new decision support architecture on the concept of data warehousing, where operational data from multiple sources is extracted, reorganized and cleaned up, then loaded into a new database around informational subjects. Unlike the operational systems, the data warehouse is optimized for decision support queries, rather than transaction processing. To date, GE Appliances has implemented three data warehouses — in Sales, Service Management and Quality — with a total database of over 250Gb.

Sales Management. In the Sales operation, data is pulled from eight different operational systems and used to build a large relational database on an HP 9000 T500 6-processor system with a Microsoft Visual Basic front-end application.

The warehouse provides analysis of sales and profit-margin data, allowing salespeople to analyze pricing and promotion data on an account-by-account basis. The information now available includes sales data on individual customers, actual sales vs. plan numbers, and the sales trends in particular markets or regions.

> **"Originally we only thought offloading the mainframes to a client/server architecture would offer cost savings, but along the way we discovered that client/server was also the solution to many of the limitations we faced in our decision support systems."**
>
> *Stephen G. Crone*
> *Process Leader for Information Warehousing*

"Using the data warehouse, we get a complete analysis at the customer level, which gives us a truer picture, as opposed to bits and pieces of information," Crone said.

One unexpected benefit of the warehouse has come from the process of validating and cleaning up the operational data.

By applying the same set of rules to data in reports coming out of the operational systems to those from the warehouse, inconsistencies can be traced back to the operational side and corrected. This has led to improved data integrity at the operational level.

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Appliances has also implemented the data warehousing concept in its Service Management operation, which manages warranty and service contracts for all appliances sold.

Since Service Management is an independent profit and loss center, decision support data in this area is as important as in product sales. The Service Management warehouse is housed on an HP 9000 T500 6-processor system and has over 100GB of disk. Desktop data access and reporting is done with standard third-party query and reporting tools.

A third solution is GE Appliances' Quality data warehouse, which is used to perform root cause analysis on appliance quality issues. The warehouse will eventually be used by several hundred employees and is based on an HP 9000 high-end server.

Intelligent Warehouse

As GE Appliances developed its data warehousing architecture, it foresaw the need for a unifying set of middleware that would tie together its multiple warehouses and provide a complete information view to its end users. The company evaluated HP's Intelligent Warehouse software and selected it to provide this single information-resource capability together with greater ease of use and improved warehousing performance.

Intelligent Warehouse provides end users with a business view of the warehouse and shields users from having to see the more complex physical columns, tables and databases of the data warehouses. GE Appliances has also seen significant performance benefits from Intelligent Warehouse. Although results have varied, reporting time in one instance has been reduced from between 18 and 24 hours to less than two minutes.

Intelligent Warehouse also provides the data descriptions, or metadata, that form the basis for GE Appliances' Encyclopedia — an end-user information catalog that allows users to easily determine both what data elements are available in the warehouses and what are the business definitions for that data.

Intelligent Warehouse is now implemented for the Service Management warehouse, and integration with the Sales and Quality warehouses will take place over the next few months.

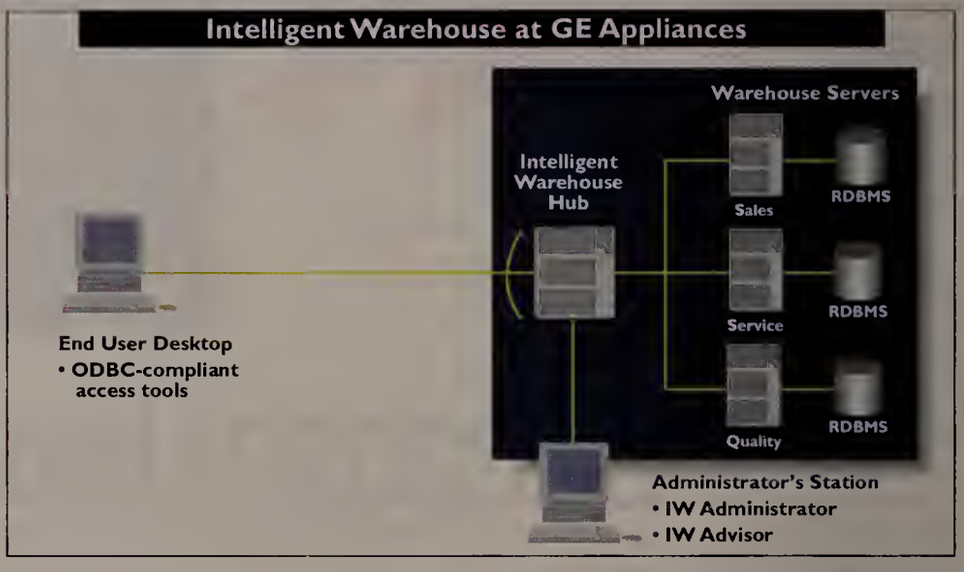
Next Level

Looking ahead, GE Appliances expects to take its data warehousing activity to the next level using HP Intelligent Warehouse to correlate data between the functionally separate warehouses, creating what would be, in essence, a single logical warehouse. An example would be comparing service contracts against production line problems to find the root causes of product defects and to suggest changes or improvements.

"Our main goal for this activity is that, as our organization continues to use these warehouses, we will have more and more instances where people will want to identify linkages between the information in different warehouses," said Crone.

"We want to give the user the ability to correlate data between physically separate warehouses, transparently — as though the decision support system for GE Appliances were a single information source.

"That," he added, "will really provide important long-term benefits." •



Intelligent Warehouse provides end users with a business view of the warehouse and shields users from having to see the more complex physical columns, tables and databases of the data warehouses.

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>
> *Stephen G. Crone*
> *Process Leoder for Informotion Warehousing*

Transitioning the IT Skill Set

Making the transition to an open, client/server environment presents challenges ranging from modifying your computing architecture, to changing your business practices, to realigning your organizational structures.

Often the greatest barriers are resistance to change and a shortage of the necessary IT skills. Overcoming these barriers is vital to a smooth, cost-effective transition.

IT managers must develop strategies for dealing with this transition period. During this period, an organization is transformed from one with a set of well-developed, yet increasingly outdated skills, into an organization with a set of newly-acquired skills, ready to redefine its future.

One strategy is to work with an experienced transition consulting team to create a transition solution which arms your internal IT staff with the skills needed for success. This process includes assessing the impact of the proposed solution on the organization, performing a training needs analysis, and finally developing an education approach.

Another strategy to manage the transitional period is to blend the skills of your internal IT staff with the focused expertise of a vendor well-versed in client/server through "selective outsourcing." At the same time, a coordinated, comprehensive education program ensures that an organization's internal resources, from executives to front-line professionals, all develop the attitudes and skills to support the new technology.

Transitional Education

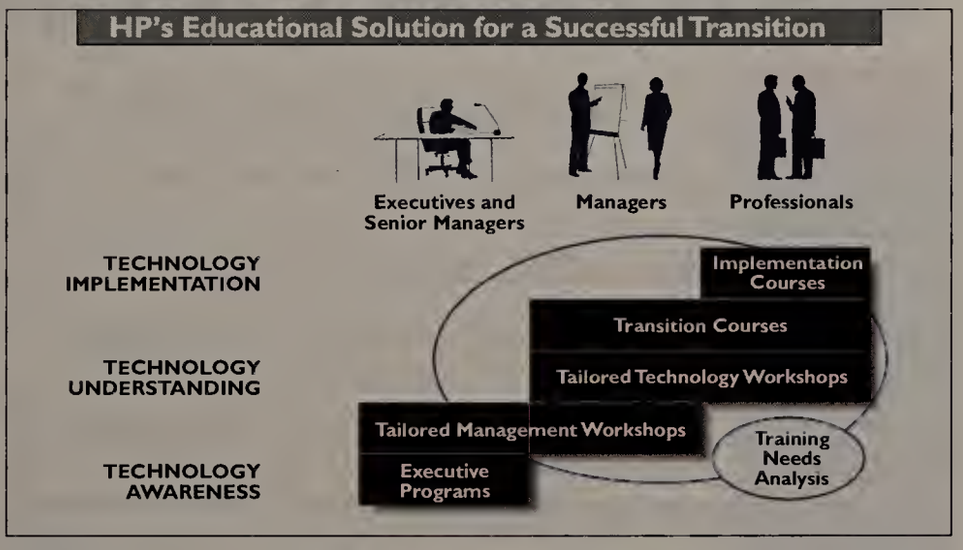
Goal of Training. If client/server enables IT systems to support business change, then education and training enable individuals to support change in IT systems. In the future, most organizations will survive or fail on the basis of the collective skills and capacity of their workers. Nowhere is this more relevant than in our IT organizations.

Transitional education involves more than just taking employees through the basics of open systems technology or client/server architecture. It also involves developing the right attitude and skills to support the new technology.

Effective training reduces resistance to change by removing doubts about the new technology. It builds confidence among your staff, so they can make a valuable contribution in the new computing environment. Investing in training demonstrates your commitment to success. With the right training, your organization will support the transition to an open systems, client/server environment with enthusiasm, motivation and effective actions.

Benefits of Education. Effective education not only provides your staff with a shared vision of how open systems and client/server will strengthen your organization, it also will build enthusiasm for new technology directions, will enable faster development of the skills needed for the transition, and will ultimately result in a smoother and more successful deployment.

Methodology and Approach. HP recognizes that education and training during a transition are essential to its success,



Effective training not only provides a shared vision of how open systems and client/server will strengthen an organization, it also allows faster development of the skills needed for the transition.

During a major transition, such as the move to open systems client/server, selective outsourcing supplements the internal skill set with specific technical expertise, tools and processes that will better manage the transition process.

In some cases, the vendor supplying outsourcing services can be used as an interim solution until internal resources are hired and trained. In other cases you may not want to invest internal resources in skills that will only be used for a transitional period, or for activities that are not considered strategic to new technology architectures.

Benefits of Selective Outsourcing. Outsourcing allows a company to focus its internal staff on core competencies, or strategic business and IT issues, and to avoid permanent staffing costs in more transitional areas.

Selective outsourcing also improves performance by providing needed technical skills and products, including access to technical experts, industry leading systems management and network management technologies, and methods proven in other organizations in similar industries. Selective outsourcing also helps contain costs by avoiding expenses normally associated with bringing IT organizations "up the learning curve." Each of these benefits is best summarized thusly: Selective outsourcing improves an organization's effectiveness and ability to adapt to change.

Selective outsourcing improves performance by providing needed technical skills and products, including access to technical experts, industry leading systems management and network management technologies, and methods proven in other organizations in similar industries."

Success with Outsourcing. Keramag AG, a German manufacturing company, decided to reengineer its IT infrastructure to support strategic business initiatives in customer service and delivery. Keramag implemented a new client/server-based application environment, upgraded hardware, developed a powerful PC LAN, and integrated the warehouses and production facilities through a WAN.

Keramag outsourced the software development to the application vendor and the IT management to HP. This outsourcing solution ensures that Keramag's information and its IT infrastructure are accessible even if part of the network or system goes down.

FoxMeyer Health Corp. is expanding its business to provide information-based healthcare services throughout its entire supply chain. The company decided to seek help in creating and managing the new client/server based environment because client/server technologies were new to its mainframe-focused IT staff.

FoxMeyer selected HP as its technology integrator not only for the transition but also for the ongoing management of the client/server environment, including performance of its frame relay network.

Through selective outsourcing, FoxMeyer was able to achieve high levels of technical skills immediately after the new system was implemented. •

UNITED GRAIN GROWERS SHARPENS COMPETITIVENESS WITH CLIENT/SERVER

Continued from page 10

hardware upgrades and software.

The entire corporate system is also more flexible and responsive to user requests, which is critical in a deregulated environment where information needs change constantly. "This flexibility allows our department to be more of a coach to users," Wood said. "Instead of designing systems for them, we can give them the flexible applications they need to create their own reports and adapt them as the business changes."

Platform For The Future

Although United Grain is already benefitting from its new systems, it has just begun to exploit these tools. "Moving to Unix has allowed us to build a platform for the future," said Wood.

"We now have a cluster of servers that can run batch, online and client/server applications, allowing our developers to design applications that meet user needs without having to design around technical constraints," he added. "With the speed and flexibility this new infrastructure provides, we're positioned to respond as deregulation and globalization continue to impact our industry." •

Master the Risk, Reap the Rewards

Huron® ObjectStar™ from Antares Alliance Group minimizes the risk of migrating to client/server



How can global information technology (IT) organizations implement client/server applications while retaining valuable legacy assets? Antares Alliance Group, an international channel partner in Hewlett-Packard's Mainframe Alternatives Program, minimizes the risk of transitioning applications from the mainframe to open computing environments with its Huron ObjectStar software.

ObjectStar helps companies take full advantage of the benefits of distributed computing. ObjectStar enables creation and implementation of client/server applications that seamlessly integrate new applications and legacy systems. Even decades-old applications can be selectively renewed and redeployed at a pace that meets business needs. This means organizations can maximize current IT investments — hardware, software, and staff — without starting from scratch.



When Isuzu Motors America wanted to input user-requested changes in real-time, and to actively involve users in new systems development, ObjectStar delivered. Now that Isuzu is building applications with ObjectStar, according to Gary Gray, Isuzu's Vice President of Business Management and MIS, "The number of requests to enhance our latest system after it moved into production is almost zero."

ObjectStar is easy to use. With only a few weeks of training, developers can deliver multi-platform, client/server applications. ObjectStar supports distributed computing from the mainframe to the desktop.

End users are involved throughout the development process, enabling the development team to produce high-quality applications that are aligned with strategic business goals.

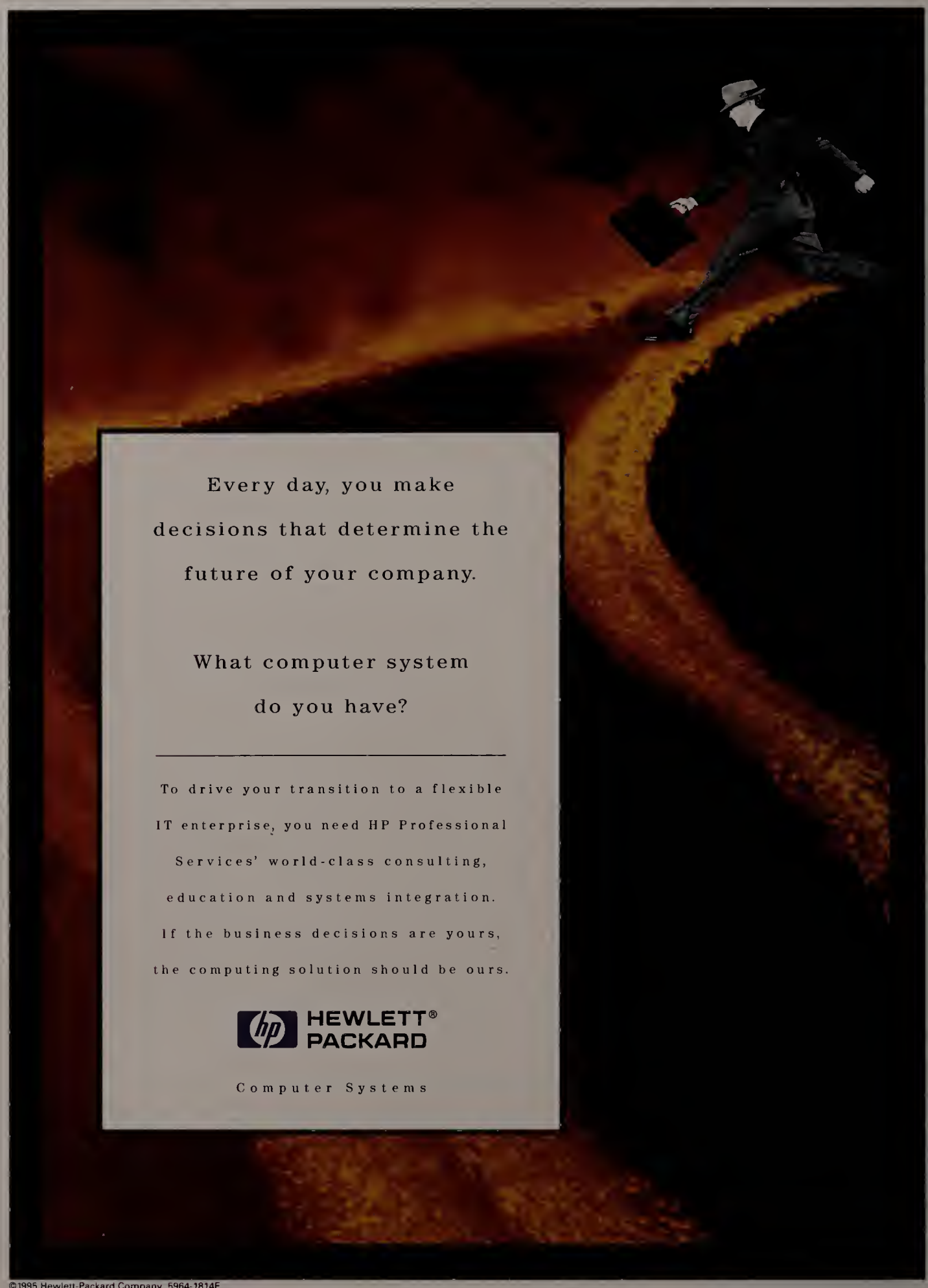
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For Omaha-based MATRIXX Marketing, ObjectStar delivered impressive two to five times gains in productivity with online applications. "Huron ObjectStar delivered speed, flexibility, and the ability to make application changes easily," said Ed Steele, Systems Administrator, MATRIXX Marketing.



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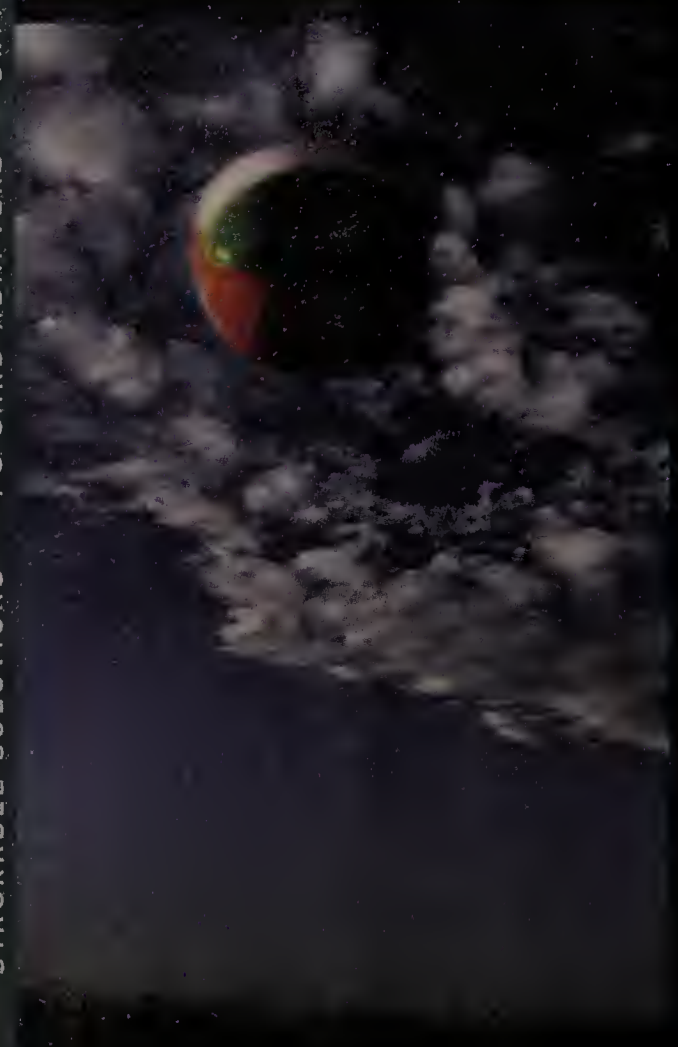
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Editorial

Et tu, OS/2?

IBM Chairman Lou Gerstner sent a chill through managers at big OS/2 sites last week with statements — which he later said were taken out of context — about the fate of the operating system.

While initial reports may have liberally interpreted his remarks, follow-up interviews by our own reporters, as well as Gerstner's letter of clarification, do seem to indicate at least a modest change in the way IBM will position OS/2.

IBM has stood steadfastly behind OS/2 as a client and a server product since the day Gerstner took the reins at IBM. In his first big address on the subject, via teleconference at Comdex two years ago, Gerstner tied OS/2 explicitly to the long-term success of IBM. Another senior executive said of OS/2, "Our commitment is unwavering."



I don't care what they said; today there's at least a little shimmying going on at IBM. There are some signals that IBM will wisely concede the stand-alone and small-client market to Windows 95. No more funky nun ads.

As for the enterprise, a company official assured us last week that IBM will "not go dark" on OS/2, adding the stock line about being "absolutely committed" to it. He was quick to note that the addition of Notes to the IBM product stable will no doubt affect IBM's plans to market to the corporate desktop; in what way is yet to be seen.

All this said (vaguely, as it comes from IBM), should those of you managing big OS/2 sites be worried?

No, I don't think so. While Microsoft is the obvious winner at the client level, IBM still has a superior enterprise strategy. No other company has IBM's cradle-to-grave pedigree when it comes to offering a total enterprise package, and that means balancing pure product expertise with service, support and integration. OS/2 is a key element in that strategy. Besides, it works.

Instead, managers will continue to weigh OS/2 on servers and fat clients against Microsoft's Windows NT. That's the real battle for which IBM is girding.

Bill Laberis

Bill Laberis, *Editor in chief*
Internet: *blaberis@cw.com*



Letters to the editor

No winners

I agree with those protesting the buyout of Legent Corp. by Computer Associates, Inc. ["Legent sale sparks write-in campaign," CW, June 12].

When CA took over Pansophic Systems, Inc., technical support became difficult and marketing support evaporated. I could never find anyone in the local office to answer questions or give me price information, for that matter.

A number of years ago I worked at another smaller software firm. CA bought its products, which were never marketed after that. Why? CA obviously wanted the customers, not the products.

I don't see anyone benefiting from the proposed merger but CA. Meanwhile, the food chain gets smaller, the choices for software fewer. Our shop is small enough to control tapes manually, but if we were looking for a tape management system and the merger goes through, I believe I'd write my own rather than go to CA. All I can say at this point is thank God that the management at Landmark Systems had foresight enough to put measures in place to prevent such an event from happening there.

Jim Wilson
San Mateo, Calif.

Show of support

I would like to clarify and update my comments in "Support shouldn't be this tough" [CW, July 3]. When I spoke to the reporter in May, I discussed several projects here at Gas Research Institute — those that I was directly responsible for and those that my colleagues were managing. My intent was to give a broad overview of GRI's experiences in dealing in the multivendor client/server world. John Mayer did an excellent job of capturing not only our frustration but the frustrations of other users.

The fax server project was handled by my colleague Peter Cangelosi and his staff. My involvement was primarily as a user tester. They did an excellent job of tracking down the problems and working with the vendors to get resolutions and are bringing the project to a successful conclusion.

John G. DaSilva
Gas Research Institute
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jdasilva@gri.org

Power move

Analysts overlooked two significant reasons the IBM/Lotus merger is a great deal for IBM. First, IBM desperately needs application software for OS/2. Lotus is one of the few major developers to produce successful OS/2 programs.

Second, as a software developer for Microsoft's Windows 95, Lotus has been and will continue to be exposed to Microsoft's future plans. This could provide IBM's operating system planners with tremendous insight into Microsoft's operating system strategy. Additionally, Lotus' experience with Windows 95 will certainly allow it to advise IBM about how to integrate and support other Windows 95 application programs in OS/2 environments as Windows 95 evolves.

It will be interesting to see how Microsoft and the Justice Department react when these factors are considered.

Robert Wintermeier
Croton-on-Hudson, N.Y.

First things first

When you noted the death of J. Presper Eckert [News shorts, CW, June 12], you perpetuated a common error by crediting Eckert and John W. Mauchly with the invention of "the first digital computer."

While Eckert and Mauchly created the Electronic Numeric Integrator and Calculator during World War II, the first known digital computer was the Model K, built by George R. Stibitz on his kitchen table in 1937. In the fall of 1939, the Complex Number Computer was in operation at Bell Labs, serving three teletype machine clients.

An interesting side note is that Mauchly attended a meeting of the American Mathematical Society at Dartmouth College in 1940 at which Stibitz gave a demonstration of the Complex Number Computer from a remote client.

Mark W. Farnham
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My cybermall went cybersplat

Jeffrey C. Frost



The power of hypertext linking as a marketing tool is grossly overrated. On-line brochures aren't enough.

On June 30, my electronic shopping mall on the Internet's World Wide Web shut its doors and laid off employees. The CyberMalls Corp. site supported about 1,200 Web pages for more than 70 companies at the time.

But rather than continue the charade of promoting a business model that just doesn't work — namely, the first-generation Web site for consumer goods and services — we closed up shop and made a resounding *cybersplat*.

cy.ber.splat *noun* **1.** the sound that emanates from a major accident on the information superhighway **2.** the remains of an entity that has been involved in a significant information superhighway accident **3.** the polite term for superhighway roadkill.

Before I tell you why we lost faith and why you might want to rethink your electronic commerce strategies, I want you to understand we were a high-quality, well-regarded operation. Most if not all of our customers wanted us to continue. *Time* and *Internet World* lauded our approach. We captured the lion's share of companies that fit the niche profile for our two virtual malls, one for Vermont-made products and one for the boating world.

But we still weren't good enough.

The basic problem was that the more we grew the more we realized that most Web-based consumer marketing efforts are doomed. They will be no more successful than those of a man who opens a hot dog stand in his alley. He figures that because the alley connects to Main Street, which connects to the state highway and finally to the interstate highway, he is putting his business in a position to successfully sell to every one of the 200 million-plus individuals who motor around the U.S.

Industry pundits now recognize Fallacy No. 1 about Web-based commerce: Just because consumers *can* connect to you doesn't mean they *will*. Fallacy No. 2 is thinking the 20 million people on the Internet even eat hot dogs or buy books or want Vermont-made products.

Fallacy No. 3 is believing your product is going to compete better via electronic marketing than it did via other means of marketing. Poor quality, high prices or poor marketing can't be overcome by an electronic miracle.

Two absolutely critical issues have been ignored or poorly executed in 90% or more of the sites I've seen.

First, you need to be part of a "special-interest virtual community" because just providing on-line brochures is a failed experiment. The power of hypertext linking as a marketing tool is grossly overrated.

Repeat traffic and active viewing occurs where members of the virtual community, such as skiers, can interact with one another, participate in surveys, see race results, read expert advice, get news on current ski conditions — and, of course, see your frequently updated marketing message and buy your products.

Second, don't even think about your Web marketing message until you clearly define electronic marketing within the context of your overall, integrated strategic marketing effort.

If you are charged with profit and loss responsibility, think realistically about these issues before plunging into electronic commerce.

Frost has landed on his feet as head of CyberPort Corp., an Internet-based foreign trade facilitation company. His Internet address is HSVG34A@prodigy.com.

The IBM/Lotus honeymoon is over

Patricia B. Seybold



The dynamic duo gets good grades so far, but now it must deal with Microsoft, the Internet and bureaucracy.

Mergers of any kind are notoriously difficult to pull off. Yet in the first 30 days, IBM and Lotus made remarkable progress — mostly because Microsoft was breathing down their necks. IBM and Lotus have their backs to the wall, and they're coming out swinging.

Five IBM/Lotus teams have been working on everything from compensation structures to the merged product line to sales strategies. By the end of last month, Lotus and IBM had talked with most of their customers, announced the new product line and solicited customer involvement in the design of their new business processes.

So far so good. Customer feedback has been positive and supportive. The momentum and energy shown by Jim Manzi and his top lieutenants is palpable and reassuring to customers who feared for their investments in Lotus' Notes and CC:Mail. By anointing Lotus' SmartSuite, CC:Mail, Organizer and Notes as the pillars of the new combined offering — coupled with IBM's Profs and Internet gateways — Lotus and IBM gave customers exactly what they wanted: a solid product line they can build their futures on.

But the honeymoon is over. The real challenges lie ahead. The first is Microsoft. The second is the Internet. And the third is bureaucracy.

What should IBM/Lotus do about Microsoft? Focus on the enterprise, business-to-business market while Microsoft pursues the consumer market. To be a credible business supplier, IBM/Lotus has to find a way to make good on its game plan to get 20 million or more Notes seats installed as soon as possible. The easiest and most seductive way would be to give away the Notes client software and adjust the pricing of the Notes server software.

The second step is to make the Notes client software much easier to install, use and administer. Then, IBM/Lotus needs to move aggressively to deliver an enterprise E-mail product line that outstrips and outships Microsoft's Exchange Server and BackOffice.

The Internet is a more elusive challenge. IBM/Lotus could position the Internet as the enemy and the IBM Global Network as the place for secure electronic commerce. But that strategy won't work. Lotus customers are already asking the provocative question: "Why do I need Notes when I have the World Wide Web?"

So the only strategy that makes sense is for IBM/Lotus to aggressively embrace the Internet and the Web, taking advantage of IBM's gateway technologies and the InterNotes software that turns Notes databases into Web pages.

How will IBM/Lotus deal with the bureaucratic bungling that tends to overwhelm most large companies and mergers? The only way is to make customer information the core of their strategy. They need to build an exquisite customer information system — one that lets customers and channel partners help themselves to the information they need to place orders, review work status and get fast answers.

Microsoft can compete with IBM/Lotus at the electronic help desk, but Microsoft is in no position to compete with IBM/Lotus on real customer information. Microsoft doesn't really know who its customers are, how they think or what their business goals are. IBM does. And Lotus can learn.

Seybold is president of Patricia Seybold Group in Boston. Her Notes address is PatriciaSeybold@seybold@notes.net. Her Internet address is pseybold@psgroup.com.



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THE POWERPC TURNS BACK THE HANDS OF TIME, 40
NORTON UTILITIES GO WHERE WIN 95 DOESN'T, 42

Desktop Computing

PCs AND SOFTWARE • PORTABLE COMPUTERS

Asset management tools get a boost

McAfee, Tally enhance product lines

By Cheryl Gerber

Two leading asset management vendors have responded to users' requirements for more extensive functionality by enriching their product offerings several ways.

For one, McAfee Associates, Inc. acquired Saber Software Corp. in late May [CW, June 5] in an effort to expand its product offerings. McAfee plans to beef up its product line further through other acquisitions, according to a source within the company.

The acquisition of Saber boosted McAfee's service, several users said.

"McAfee used to be weak in technical support, but the consolidation with Saber Software gave them a strength in this area," said Randy Manske, a senior LAN administrator at Oppenheimer Management Corp., an investment banking firm in Denver.

McAfee is also moving from local to enterprise management capabilities. For example, it recently added TCP/IP wide-area network support to its SiteExpress 3.0 software distribution package for PC LANs.

Signs of maturity

Desktop asset management vendors are expanding their offerings in the following ways:

Tally Systems
1. Partnered with Bendata to offer help desk capability
2. Partnered with OnDemand Software for software distribution capability
3. Bundled all products into suite offering

McAfee Associates
1. Acquired Saber Software to gain market share
2. Added enterprise support for entire product line
3. Planning additional acquisitions

Tallyho!

Meanwhile, Tally Systems Corp. in Hanover, N.H., and OnDemand Software, Inc. in Naples, Fla., recently agreed to bundle OnDemand's WinInstall software distribution product with Tally's Cenergy asset management suite. WinInstall works with Microsoft Corp.'s Systems Management Server to distribute Microsoft's Windows 3.1 and Windows 95 software.

"It's critical for asset management companies to offer suites and to tie into the Microsoft world," said Gary Hartmann, a se-

Asset management, *page 42*

Helping hands

Digital, Manpower to answer call for Windows 95 support

By Stuart J. Johnston

When Windows 95 is released, Microsoft Corp. will have 1,500 support engineers working the phones. Even so, the company admits there probably aren't enough support people to handle the upcoming call crunch.

For those who aren't prepared to wait or scan electronic bulletin boards in search of help, outside options are available.

Begining next month, Digital Equipment Corp. in Maynard, Mass., will provide Windows 95 support on a contractual basis as part of a set of new support offerings it announced last month. Under the plan, a single incident or problem call to Digital's help desk service will cost $132. The company will also contract for long-term support, using an "incident-based" model.

"We're going to a model similar to what Microsoft has done" with its Premier Support offering, said Steve Yachimski, Digital's U.S. hardware and software services marketing manager. Under that model, users pay for contracts that allow them a certain number of incidents per year.

One option will be call-in help desk support for Windows 95. Digital currently has 1,000 systems engineers trained in the U.S., Yachimski said. The company also offers support for Microsoft's BackOffice server suite.

Dennis Sato, chief information officer at Laguna Honda Hospital in San Francisco, has been a customer of Digital's help desk services for several years. While the relationship hasn't always been smooth, Sato said he has been satisfied overall with the specific types of support that he contracts for, including network and PC support.

"I think we have to take a look at" Digital's Windows 95 offering, Sato said. But he cautioned that his approach to Windows 95 adoption will be slow and measured.

Who ya gonna call?

Interested parties can call these numbers for information on outside help with Windows 95

Digital's support offering
Digital's Help Desk Services
(800) 888-4234, x602

Manpower's support offering
Strategic Information
(training and contract help-desk personnel)
(414) 961-1000

The people approach

Taking a different approach, Manpower, Inc. in Milwaukee is ready to provide temporary and long-term employees who are trained to support Windows 95 and Office 95, said Sharon Canter, Manpower's director of strategic information. The program will begin Aug. 24.

User training in Windows 95 and Office is also available from Manpower, beginning with a single day of Windows 95 training for about $100 per user. Manpower officials also said they can train as many as 100,000 of their own temporary employees on Windows 95 by the end of the year.

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NOKIA MONITORS

PowerPC needs jolt

Lack of native software apps, gee-whiz features hurt potential

By Howard Millman

With the release of the PowerPC, IBM has turned back the hands of time to 1982.

Then, as now, IBM created a costly desktop computer that lacks application software, offers nonmainstream operating systems and has scant apparent customer demand. Back then, a market in search of these things coalesced around IBM's PC. Today, it probably won't because all these things exist for other products.



BETSY HAYES

The raw read

From a raw performance perspective, our 133-MHz IBM Model 850 test unit contained the pent-up energy of a dragster smoking its slicks at the starting line. The test unit's PowerPC 604 CPU ran the handful of available native applications at speeds that left our custom-built Intel Corp. 66/100-MHz Pentium-based machine running at a distinct second. While our Intel box had only half the RAM — 16M bytes — that shouldn't have yielded major differences in areas such as word processing performance.

In opening and editing a variety of richly formatted spreadsheet and text documents, we obtained, on average, a 50% performance increase compared with manipulating similar documents under Windows 3.1 versions of the software.

The PowerPC's RISC-based design optimizes floating-point operations. Floating-point processing is prevalent in processing video, audio and graphic operations, and here is where the PowerPC really makes its mark. Graphics ran nearly twice as fast as Windows 3.1 applications. This performance gain was consistent for all of our graphic handling routines, including font changes, scrolling and photo-morphing segments.

Smooth ride

More modest performance improvements, such as decreased load and save times, resulted from the fast throughput delivered by the test unit's 1G-byte integrated drive electronics hard drive, 32K bytes of unified Level 1 cache and its hybrid 32/64-bit architecture.

The need for software emulation is acute for the PowerPC because so few native applications exist.

Our emulation test results varied but gave little to cheer about. DOS-based programs, which were run in Microsoft Corp.'s Windows NT's DOS box, behaved predictably and executed at the same speed or faster than they did on an 33/66-MHz Intel I486DX2-based PC.

Windows applications, which run in standard mode, chugged along even more modestly at about the same speed as a 33-MHz I486DX. Insignia Solutions, Inc.'s late 1995/early 1996 upgrade to its Windows 3.1 emulator will let Windows applications run in enhanced mode and should improve overall emulation performance. But whether it is enough of a boost to matter remains to be seen.

On a somewhat more positive note, the Windows NT environment in the next several months will become a source of application software as vendors recompile their NT applications to run on the PowerPC.

Those who conquer the cover's poorly designed "quick release" clasp will find an easy-to-service, easy-to-upgrade unit. The box offers a mix of five Peripheral Component Interconnect and AT bus slots, five disk drive bays and a zero-insertion force socket for an unannounced upgrade chip.

Minor disappointments include a system setup on diskette (truly a throwback) and a start-up routine that takes nearly two minutes.

Whether the PowerPC has any chance of becoming an industry standard depends on how quickly IBM, its licensees, PowerPC partners, value-added resellers and independent software vendors deliver the myriad promised products.

Missing are additional operating systems (OS/2 Warp Connect in late 1995 and Sunsoft, Inc.'s Solaris in early 1996), videoconferencing, speech recognition, whiteboarding, built-in Motion Picture Experts Group video playback and seamless compatibility with Apple Computer, Inc.'s Mac OS.

If these enhancements arrive and perform as promised, the PowerPC architecture could capture the high-end desktop market. Until then, we recommend it only to early adopters willing to pay a premium to participate in early speed trials.

Millman operates the Data System Services Group, a networking advisory and installation service in Croton, N.Y. He can be reached at hmillman@mcimail.com.

Test pattern

We tested the PowerPC machine using 32-bit PowerPC versions of Microsoft Word 6.0 and Excel 5.0 and North Coast Software, Inc.'s PhotoMorph. All ran under Windows NT 3.51.

The unit we tested lists for about $6,500 and includes a 17-in., high-resolution monitor with built-in audio; a 1G-byte drive; 32M bytes of RAM; and a quadruple-speed internal CD-ROM drive.

We assembled the test unit in minutes, needing the manual only to verify the connections of the monitor's audio and video camera jacks. A promised future option, a monitor-mounted $350 NTSC video camera, is designed for videoconferencing.

—Howard Millman

Lotus tries to put Organizer in order

By Suruchi Mohan

Lotus Development Corp. recently announced Organizer 2.1, a maintenance upgrade designed to correct the problems in Version 2.0.

Organizer is a personal information manager that lets users maintain and, in a network environment, share calendaring and scheduling information.

According to users, the latest version comes not a moment too soon.

'Absolutely faster'

The most widespread complaint about Organizer 2.0 had been its speed, and Lotus has fixed that problem.

'Speed is a big improvement," said John Sulmeyer, president of Reuben-Spelder Production, a computer consulting company in Lake Tahoe, Calif.

"It is absolutely faster," said Charles Suisman, publisher of "Manhattan User's Guide," a newsletter in New York. With Version 2.0, Suisman estimated it took him 45 seconds to retrieve information from a very large file. It now takes him about 15 seconds on his Intel Corp. 1486-based computer.

Version 2.0's slowness is attributable to its file format, which is different from the earlier — and faster — Version 1.0. A 250K-byte file in Version 1.x would grow to more than 1M byte in Version 2.0, for example.

"When the file becomes that large, the search engine will become slower," said Kent Soule, principal of Soule Microsystems, a consultancy in San Francisco. Although Version 2.1 keeps the same file format, its speed has improved, but not to that of Version 1.x.

Version 2.1 is also more stable. Version 2.0 crashed fairly often, Suisman and others said.

Other 2.1 enhancements include the following:

- Users can now print weekly and daily pages from the calendar as well as the Notepad's table of contents.
- File compression.
- Better administration. For example, Version 2.1 offers a utility menu that lets administrators reset or change user access.

All the fixes

Issues with Organizer 2.0	Status of issues in Organizer 2.1
Slow product	Resolved
Lack of interoperability with Notes and CC:Mail	Resolved
Huge file size when importing	Still an issue because of change in file structure; Lotus recommends archiving
Graphical display problems	Resolved

Despite the ease of use and friendly interface that endear users to Organizer, some customers want more improvements.

The product doesn't offer "the level of performance I was hoping, but it's much better than it was," said Andrew Gawin, desktop architecture analyst at Firstar Information Services Corp. in Brookfield, Wis.

"We're pretty happy" but would still like to see better remote access, Gawin said. Right now "it's pretty painful," he said, explaining that it takes a long time to open files that come over a 14.4K bit/sec. modem link.

Also, resource allocation leaves room for improvement. Right now, he said, everyone in the firm sees all the resources, such as conference rooms. He would like users to see only the resources at their site.

Barbara Baird, Lotus director of marketing, said Version 2.1 isn't considered a major upgrade and that remote access will come in a later release.

Overall, users said they are happy. "It is one of my two to three favorite applications," Sulmeyer said. "I always come back to the Organizer."

IBM, which now owns Lotus, dropped its own Time and Place scheduling application and will continue to develop Organizer.



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Norton utilities go where Windows 95 doesn't

Products fill in backup and recovery holes

By Lisa Picarille

Symantec Corp.'s Peter Norton Group this week will ship a trio of Windows 95 utilities meant to exploit the limited backup and recovery tools in Microsoft Corp.'s anticipated operating system.

The three new products and their functions include the following:

- **Norton Utilities for Windows 95** provides system protection and data recovery. It includes a new feature called System Doctor, which continuously monitors system resources in the background without using system memory required to run other applications. The product costs $119 or $59 to upgrade.
- **Norton Navigator for Windows 95** provides facilities for managing files. At $99, or $39 for upgrades, it offers built-in file transfer protocol (FTP) mapping and file transfer from the Internet. It also supports the long file names feature of Windows 95. Norton Quick Launch lets users launch applications, folders and files more quickly.
- **Norton AntiVirus for Windows 95** is a 32-bit virus detection and protection program. Priced at $79, or $29 to upgrade, the product can be distributed, configured and updated across a network.

New products from Symantec's Peter Norton Group

Feature	Function
Norton Utilities for Windows 95 (for system protection and data recovery)	
System Doctor	Monitors system resources in the background and alerts users to problems
Space Wizard	Lets users delete files using a variety of criteria, including file size, date created and file extensions
32-bit Speed Disk	Optimizes system performance and reduces file fragmentation
Norton Navigator for Windows 95 (for file management)	
Built-in FTP mapping and file transfer	For copying files from the Internet
Quick Launch	For launching applications, folders and files from Norton Navigator
Norton AntiVirus for Windows 95 (for virus protection)	
Constant virus scan	Runs in the background
NAV/Net	Lets program be distributed, configured and updated networkwide
32-bit virus scanning	Runs faster under Windows 95

Hear them roar

Worldwide revenue in the utility market last year was $406 million. Sales of Windows utilities accounted for $263 million of the total revenue, and Symantec had the lion's share of the Windows utilities revenue with $79.6 million, according to Dataquest.

Symantec's gain

Analysts said Symantec will be able to take advantage of the early lack of applications for Windows 95 and the limited functionality of the operating system's utilities.

"Windows 95 will draw buyers into the store, and Symantec will take advantage of that since there are not a lot of Windows 95 applications and buyers will want software to work with their new operating system," predicted Bryan Fukuda, an analyst at Dataquest, Inc. in San Jose, Calif. Fukuda said Microsoft's decision to put only a scan disk and defragment feature into Windows 95 should boost sales of Symantec's utilities.

A beta tester for both Windows 95 and Symantec said the Norton products helped him recover from an episode where the Windows 95 beta wouldn't load, and he kept getting the shutdown screen. Norton Utilities comes with a boot-up disk, which was crucial in this case.

"This allowed me to start Disk Doctor, which informed me that I had a bad partition table. This is one of the worst errors you can get, but Disk Doctor fixed it, and Windows 95 now runs fine," said David MacCallum, a contract specialist at PacifiCare of Oklahoma, a Tulsa, Okla.-based health care provider that has more than 250 PCs.

MacCallum also praised the new System Doctor feature. "I like the fact that I can ... configure [System Doctor] to prompt me when there is a problem or to automatically take care of problems," he said. Before, "the only time I remembered to run it was after an error occurred."

Norton Utilities for Windows 95 also features Space Wizard, which enables users to delete files using a variety of criteria, including file size, date created and file extensions. In addition, 32-bit Speed Disk optimizes performance and helps reduce file fragmentation.

Asset management tools get a boost

CONTINUED FROM PAGE 39

nior designer at Subaru of America, Inc. in Cherry Hill, N.J.

Hartmann said he used Tally's NetCensus inventory management product to inventory the 700 PCs at Subaru's Cherry Hill headquarters. Hartmann and other Tally users said the company's product integration will build on its strengths in inventory management.

"Tally's NetCensus product stores the data in a standard dBase file format, whereas other products use proprietary formats," said Gary Martin, manager of asset management services at IBM, a longtime user and beta tester of Tally products.

Tally also recently added Software Census 1.0, an inventory package with links to Systems Management Server 1.1, to its product line. The company will release products on Microsoft's Windows 95 and Windows NT this fall.

This push by vendors to offer suites and add functionality is also the result of a maturing market for client/server computing, analysts said.

"Now that users have found there are 20 to 30 management activities involved in keeping a distributed environment up and running, they are looking for a single tool to do a variety of things," said Waverly Deutsch, an analyst at Forrester Research, Inc., a consultancy in Cambridge, Mass.

Deutsch said the trend toward consolidation highlights a rush by vendors to survive the inevitable shakeout that accompanies market maturation.

"The utilities vendors are trying to survive long term by becoming strategic, by providing more functionality to their accounts," she said.



Advanced Visual Systems, Inc. recently announced Gsharp, software for automating graph creation.

According to the Waltham, Mass., company, Gsharp combines two- and three-dimensional graphing and contouring with presentation tools to let users transform recurring technical data into sophisticated presentation graphs.

The product allows users to create customized graphs interactively as well as turn the graphs into reusable macros and applications.

The product was designed for applications that require precise and complex graph layout and need more than spreadsheets and graphic presentation tools.

Gsharp is available on Unix and mid-range platforms, including Digital Equipment Corp.'s OpenVMS, VAX/VMS and Digital Unix, Hewlett-Packard Co.'s HP-UX, IBM's AIX, Silicon Graphics, Inc.'s IRIX and Sun Microsystems, Inc.'s Solaris and SunOS.

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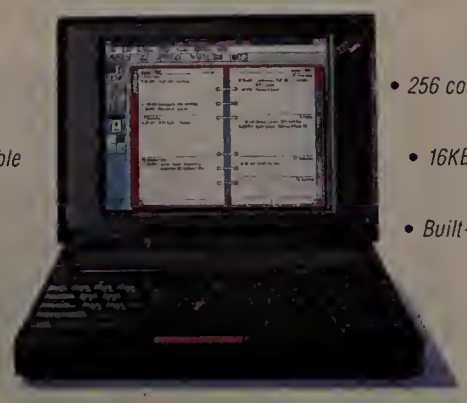
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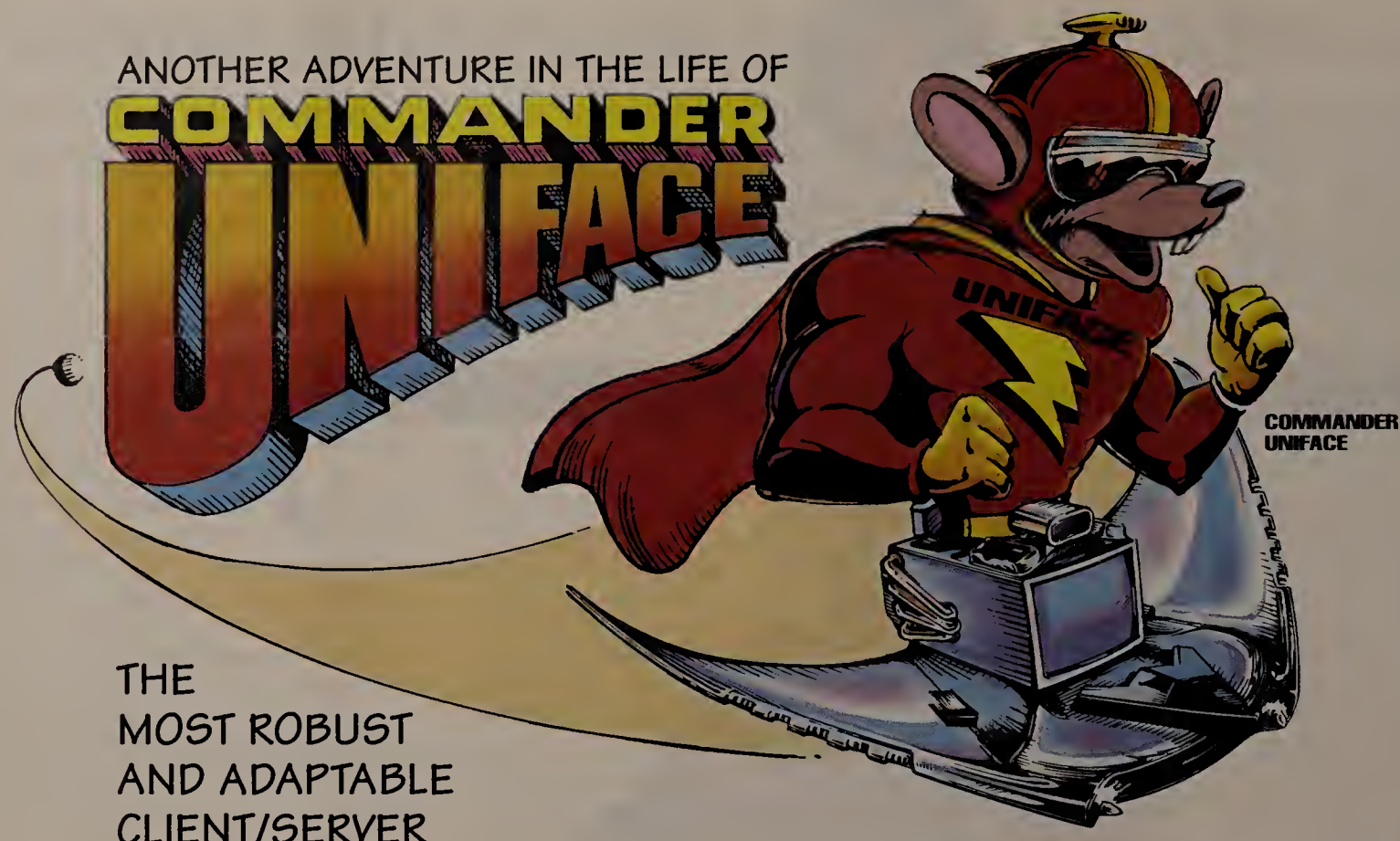
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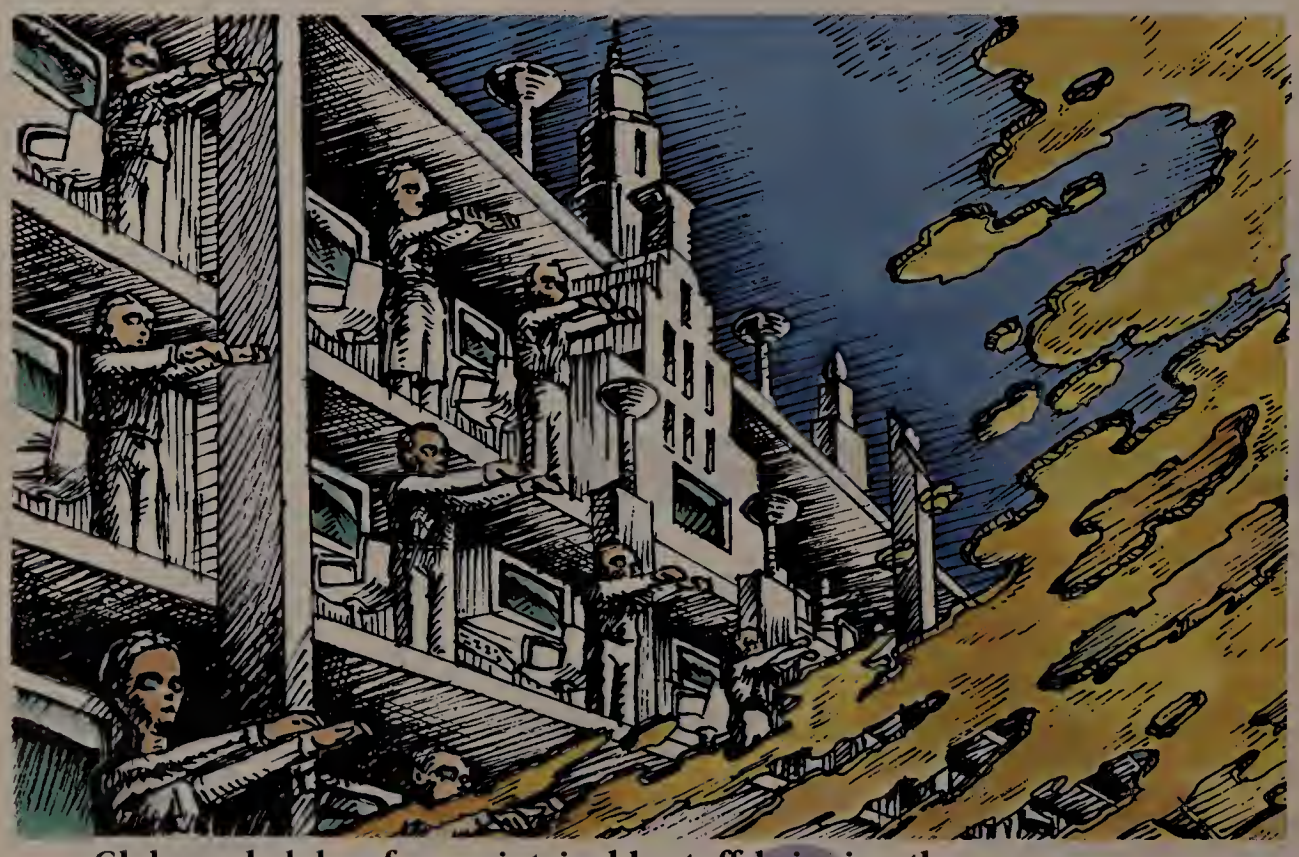
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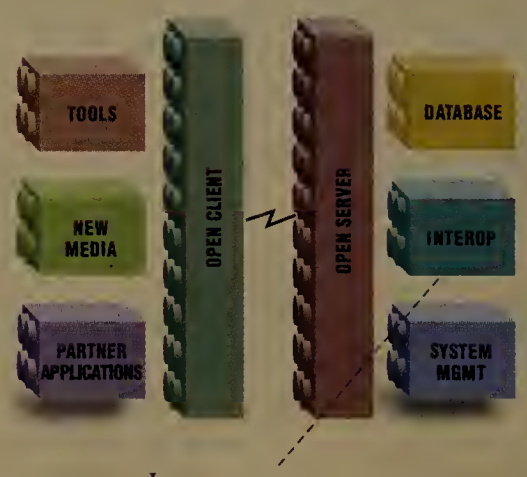
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INFORMIX LANDS APPLICATION SUPPORT FROM THIRD-PARTY VENDORS, 48

Workgroup Computing

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Vendor	Product	Function	Pricing
Andataco San Diego	RAID Lite	RAID for small PC- or Unix-based LANs	Starts at $4,995
Cubix Corp. Carson City, Nev.	SafeStor/FT	RAID-ready mass storage chassis with reconfigurable backplane	$1,995 for chassis; $995 to $3,045 for hot-insertable drive/tray assemblies

RAID front

New RAID chassis eases client/server array configuration

By Steve Moore

The migration of RAID technology from mainframe to client/server environments is not driven only by cheaper RAID arrays these days. Emerging as a key factor are RAID-related products that make it easier for users to configure and reconfigure RAID arrays.

One such product is SafeStor/FT, a RAID chassis from Cubix Corp. in Carson City, Nev. It allows users to create as many as six independent RAID subsystems in one enclosure.

Flexibility is key

Analysts said the PC LAN-oriented product adds configuration flexibility and fault tolerance to RAID arrays.

"SafeStor's originality is in its ability to adapt through its backplane to one or several platform environments," said Farid Neema, president of Peripheral Concepts, Inc., a consulting firm in Santa Barbara, Calif.

That is accomplished via a SCSI backplane that holds up to 12 hot-swappable drives and can be configured as one large RAID subsystem or into as many as six independent subsystems.

It is easy for administrators — or even end users — without extensive technical skills to manually reconfigure the array, said Bill Botti, president of Computer Networks, Inc., a value-added reseller in Pleasanton, Calif.

The company focuses on remote office environments.

"If you have six application servers and tomorrow your storage requirements per server go up, you could easily add two more drives per server" by moving SCSI bus connectors, he said. Also, Botti noted, SafeStor/FT "doesn't require a Cubix processor. You could hook it up to a Compaq or Dell system."

Botti also noted that SafeStor/FT "would recognize RAID levels set on the controller and deal with the addition or subtraction" of disks and RAID subsystems. RAID levels specify several data protection techniques that can be used with applications that use storage systems in different ways.

Stiff competition

While SafeStor/FT is a step forward in client/server RAID flexibility, Neema said, "It is not as powerful as [Hewlett-Packard Co.'s] AutoRAID," a new technology that automatically migrates data among multiple RAID levels without requiring administrators to deal with RAID's intricacies [CW, July 31].

SafeStor/FT is available now for $1,995. Hot-insertable drive/tray assemblies are available in 1-, 2- or 4G-byte capacities at prices of $995, $1,795 and $3,045, respectively.

SCSI and RAID controllers are available separately.

'Lite' storage

Andataco Corp. in San Diego recently introduced RAID Lite, a RAID array for PC LANs or small Unix networks that supports as many as 35 disk drives up to a maximum total capacity of 140G bytes. RAID Lite supports a common user interface across multiple operating system platforms; prices begin at $4,995.

Unix vendors greet GUI with cautious optimism

Long-awaited Common Desktop Environment interface lets users mix and match Unix workstations

By Jean S. Bozman

More than two years after it promised to challenge Windows, the Common Desktop Environment (CDE) — a unified desktop for Unix systems — is finally ready to ship.

The CDE user interface includes a windows manager, applets for electronic mail and calendaring and a single Unix-based graphical user interface. Launched with the Common Open Software Environment (COSE) effort to unify Unix in March 1993, CDE is now a standalone Unix standard certified by the X/Open Co.

The standard allows users to mix and match Unix workstations while maintaining a common look and feel for all users' screens. It has merged with the Open Software Foundation's (OSF) Motif interface, and its future development will be carried out by a vendor-funded OSF task force.

The early promise of a unified Unix desktop as a rival to Microsoft Corp.'s Windows slowly gave way to the reality that CDE is most useful at sites that own many Unix workstations. That is because many Unix sites prefer to use Windows-based PCs, which deliver corporate E-mail and create Windows documents and reports, as clients to corporate Unix servers.

All the major Unix vendors plan to ship CDE, either bundled or as a separate module, this fall. Users will also be able to buy it from TriTeal Corp., a $5 million firm that helped the COSE vendors integrate CDE code for all Unix systems. TriTeal will ship its TED 4.0 CDE product, priced at $425, by mid-August. TED versions will run on IBM's AIX, Hewlett-Packard Co.'s HP-UX, Sun Microsystems, Inc.'s SunOs and Solaris 2.x, Silicon Graphics, Inc.'s Irix and Digital Equipment Corp. Unix.

Systems vendors are looking for a cue from users and independent software vendors to see whether CDE-compatible applications will really take off. Some vendors, including IBM, HP, Digital and Novell, Inc., have decided to bundle CDE with future versions of their Unix operating systems. But others, including Sun, are offering CDE only as an option.

"If the user community says this is goodness, then the vendors will respond. Everyone is optimistic but cautious," said Philip Johnson, an analyst at International Data Corp. in Mountain View, Calif. He said large companies could benefit most by being able to replace Unix workstations at will without affecting system administration.

Aways to go

Yet even those users who stand to gain most from CDE are far from standardizing on it.

"If you've done your homework, you can get much of what you need right now," said David Pensak, principal consultant at Du Pont Co.'s Advanced Computing Technology group in Wilmington, Del. "We set up all the configuration files and scripts to look the same ... [but] CDE makes that a lot easier." The Du Pont engineering site has several CDE copies under evaluation and testing.

But CDE's benefits could outweigh any concerns about installing it on Unix workstations that have other interfaces, such as Sun's Open Look or HP's Vue.

"We have one group that supports mixed environments with different types of workstations," said Dan Minor, manager of computer-aided engineering applications at airline engine maker Pratt & Whitney, a division of United Technologies Corp. "That will make life easier [for them] since it will make their workstations look alike."

Potential key user applications for CDE include ones that use Unix workstations as personal desktops for financial traders, customer-service applications in telecommunications and manufacturing.

Industry analysts expect CDE to start gaining acceptance at independent software vendors, which can leverage CDE to write applications once and deploy them on many Unix hardware platforms.

The life of CDE

March 1993
Launched with the Common Open Software Environment effort as a unified Unix desktop to compete with Windows.

October 1993
Common Desktop Environment (CDE) developers conference in San Jose, Calif., describes how unified Unix desktop works; early developer's kit is distributed.

April 1994
CDE snapshot distributed at UniForum 1994. Soon after, Unix vendors start to work with TriTeal to speed CDE 1.0 ports.

March 1995
Official CDE 1.0 launch at UniForum 1995 in Dallas. TriTeal prepares CDE versions to ship with current Unix platforms. Unix vendors promise to ship CDE code with their next major operating system releases.

April 1995
The Open Software Foundation (OSF) approves CDE/Motif development project.

May 1995
OSF merges OSF/Motif 1.2.4 with CDE 1.0's Motif GUI.

June 1995
X/Open announces CDE branding program to ensure specification compliance by vendors. Branded CDE code set to ship with Unix systems by fall.

Fall 1995
Vendors start shipping X/Open certified CDE code.

Informix's OnLine lands applications, gets leg up on Oracle

Support from Netscape, BMC among them

By Kim S. Nash
SAN JOSE, CALIF.

Informix Software, Inc. has been criticized for lagging behind its database rivals when it comes to garnering support of third-party application makers.

Oracle Corp. users, for example, can choose among thousands of financial programs, monitoring and management utilities, development tools and other applications built for or ported to the Oracle7 database. Their Informix counterparts, on the other hand, find that application software is more limited [CW, March 20].

But times are changing if the recent Informix User Group show is any indication.

At the show, some 5,000-plus attendees saw announcements supporting Informix's flagship OnLine database from several firms, including BMC Software, Inc. and Netscape Communications Corp.



A change in plans

In fact, Informix's joint development deal with Netscape, whose World Wide Web browser helps users navigate the Internet, was a blow to Oracle. Netscape had planned a series of applications and Web development tools to support Oracle7 but opted for Informix OnLine instead.

Marc Andreessen, co-founder and vice president of Netscape in Mountain View, Calif., alluded that potential competition from Oracle, which plans its own Internet products, figured into the deal [CW, July 24]. Oracle offers its own tools for building Internet applications that would compete with current and planned products. For example, Netscape will ship a series of similar development tools late this year, Andreesen said.

The hype of the information highway aside, Informix and several partners announced products related to more immediate nitty-gritty database problems.

Informix detailed plans for replication — the copying and synchronizing of databases — much to the relief of some observers who worried that the firm would fall further behind Oracle or Sybase, Inc. in this arena.

Until last month, Informix offered OnLine users only the capability to copy complete databases rather than smaller sections such as tables or rows.

Middleware help

To go beyond that rudimentary function, Informix has enlisted the help of Platinum Technology, Inc. and Praxis International, Inc. They plan to provide gateways and other middleware products to replicate information stored in OnLine to and from other databases.

Coming together

Informix users from at least 36 regions worldwide unveiled a newly created Informix International User Group last month. Potential members can contact the Fremont, Calif.-based group at (510) 656-5116 or 7311.3553@compuserve.com.

A version of Platinum's InfoExpress replicator for Informix is due to ship in the fourth quarter. Prices start at $15,300, depending on the number and size of hardware processors, according to the Oakbrook Terrace, Ill.-based company.

Cambridge, Mass.-based Praxis plans to ship its OmniReplicator for Informix at about the same time. Pricing was not available, however.

To fill a hole in Informix's New Era development kit — where some users have said a report writer should be — MITI has inserted its SQR3 product. The Long Beach, Calif., firm released a class library designed to let developers write SQR3 functions into applications they build with the New Era tool.

BMC Software in Houston announced that Patrol 3.0 will support Informix OnLine when the monitoring utility ships this month. Prices start at $6,000 and depend on the number of consoles and managed objects.

Audio, speech gain in multimedia

By Tim Ouellette

Although multimedia has been around for a while, audio and speech features are gaining importance in multimedia applications. Now, developers are looking for ways to mold this media.

VoxWare, Inc. in Skillman, N.J., for example, is providing a suite of speech-related tools for multimedia applications. Called ToolVox, the suite could improve business presentations and training programs.

Sounding like something from *Star Trek*, ToolVox, with prices starting at $895, lets users compress, warp, morph and repitch speech.

Sam Sheddan, a senior authoring systems engineer at The Learning Co. in Knoxville, Tenn., said he uses the Warp tool in the suite to adjust the playback of native language recordings for the company's foreign language instruction software products.

"For us, next to video for showing the native speaker's expression, sound is the most important element," Sheddan said. "The biggest difficulty for users is that the native language is often spoken very fast. So we record the native speakers, and without losing any voice quality, we bring it down to a manageable, workable level."

While other developers provide somewhat similar warping features, VoxWare's Morph-It tool is unique, said Will Strauss, an analyst at Forward Concepts in Tempe, Ariz.

"You can take a template of sound, and when you speak [or run a tape of speech], you can sound like that voice," Strauss explained. "It is like taking a tape of John Wayne and making yourself sound like that."

IS training costs

Multimedia-based training applications may soon be even more cost-effective: Dataquest, Inc. predicts information systems-related training costs will increase $1 billion each year from current spending of $9 billion through 1998.

Saving money and time

Tools such as these can help developers save money and time when creating training or presentation materials because they can do many things with one recording and tailor it to users' needs.

Steve Barlow, director of Lotus Development Corp.'s multimedia group, said the combination of screen action and sound in training applications is very powerful and more intelligible for users. He added that sound alone isn't as effective because it often imitates functions already performed by the telephone.

Internet link, Windows added to mobile sales system

By Mindy Blodgett

Data Systems Support (DSS) last week rolled out the latest version of its Sales Information Response System (SIRS), adding several features meant to make life easier for mobile users.

SIRS 7.0 now supports Microsoft Corp.'s Windows 3.0 and Windows 95; it also gains Internet connectivity and a sales opportunity management system.

One SIRS user, Steve Jackson, director of marketing information systems at Dearborn Financial Publishing, Inc. in Chicago, said he is considering upgrading to SIRS 7.0. He is interested in its new data access capabilities, which could help the company's field service representatives.

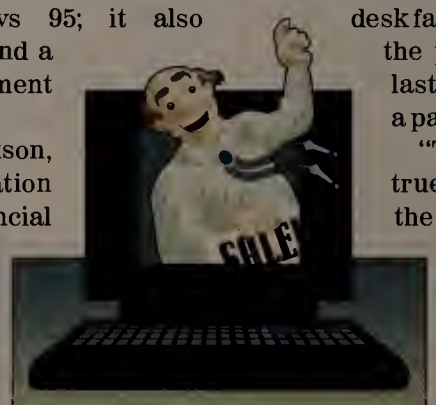
Working together

"We need to get these folks on the same database," Jackson said. "We have different field service representatives calling on the same account, and so we could really use more ability to have everybody, both inside and outside the office, working on the same information."

Judy Hodges, an analyst at International Data Corp. in Framingham, Mass., said the additional features in SIRS 7.0 "push DSS up into the higher tier of sales force automation players such as" Brock Control Systems, Inc.

However, she said the software lacks one key ingredient: the customer support system piece. It was designed to manage and track a help desk facilitybut will not be included in the package right away due to a last-minute problem DSS had with a partner.

"That prevents it from being a true suite," Hodges said. DSS said the customer support feature will be available within 90 days.



Features of Sales Information Response System 7.0

- Client/server system based on object-oriented technologies.
- Internet connectivity.
- Support for Windows 3.1 and Windows 95.
- Host-based communications server enabling mobile users to access enterprise data more quickly.
- Data warehousing capabilities.

Pricing, features

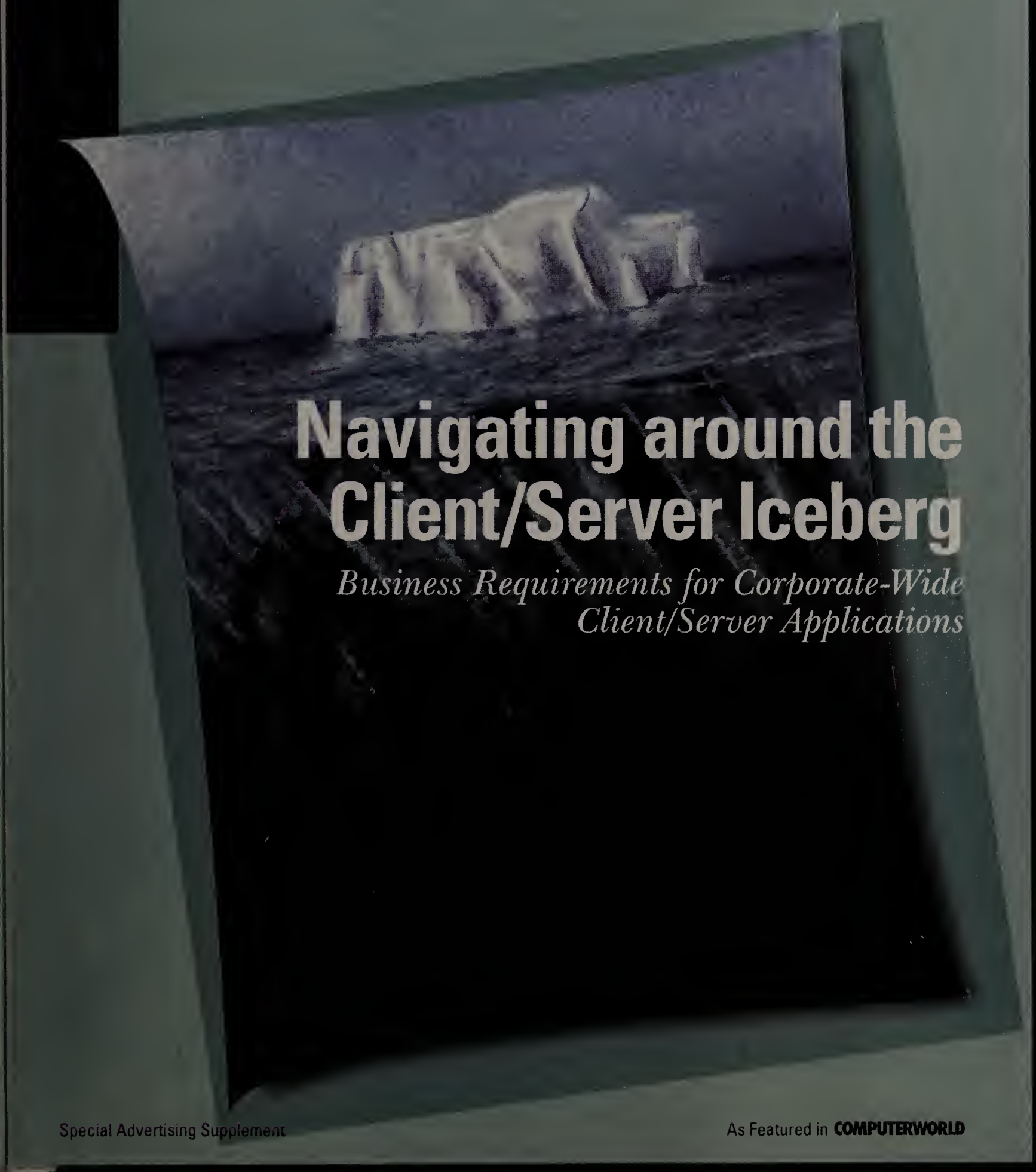
The rest of the package is available now. Pricing ranges from $1,900 to $2,750, depending on how many modules are purchased. The modules, which can be bought separately or in combination, offer such features as telemarketing and data warehousing.

The software also offers remote host communications and an open architecture compatible with several operating systems and databases, including ones from Oracle Corp., Sybase, Inc. and Informix Software, Inc.

White Paper

August 7, 1995

HURWITZ CONSULTING GROUP, INC.



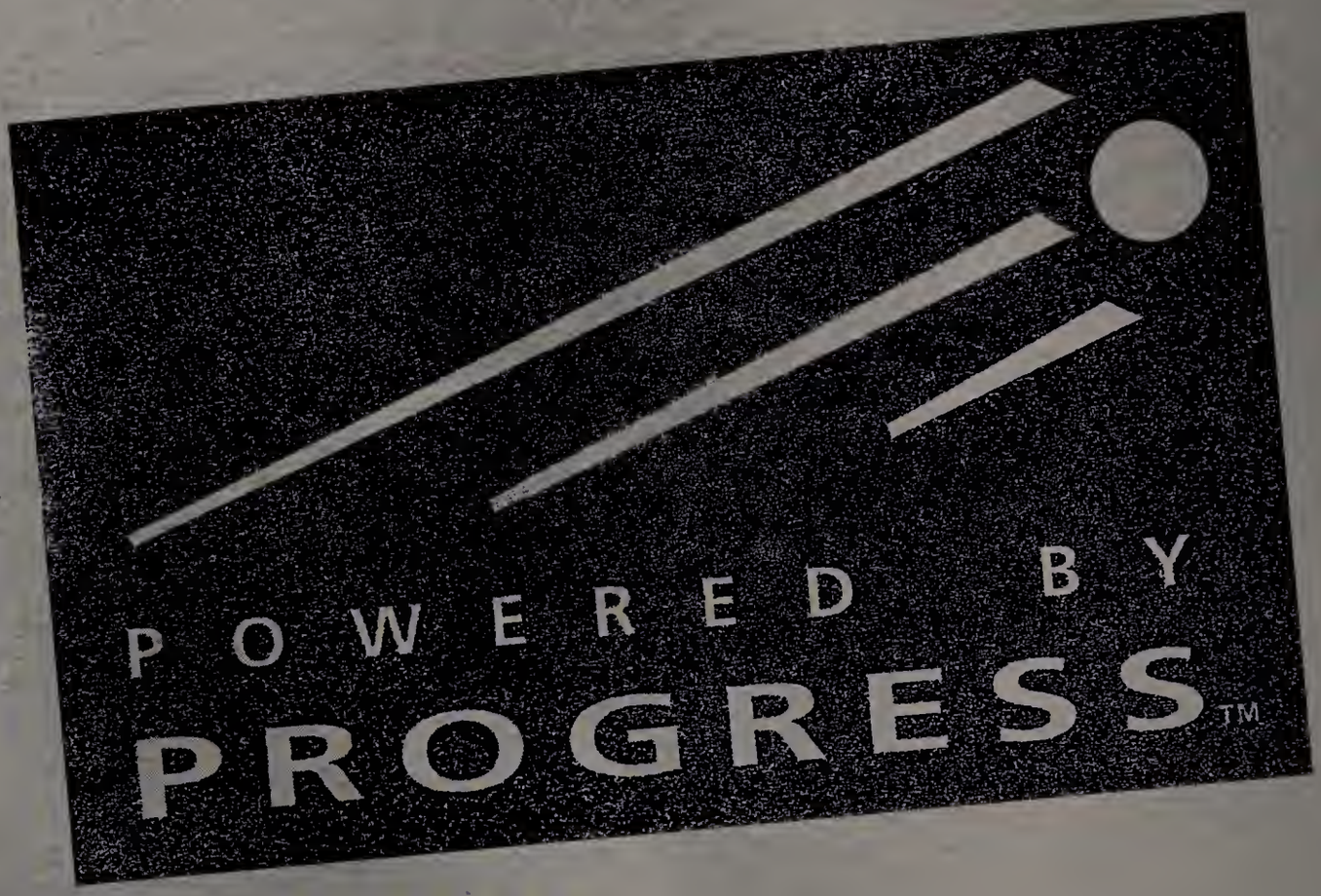
Navigating around the Client/Server Iceberg

Business Requirements for Corporate-Wide Client/Server Applications

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Introduction



Navigating Around the Client/Server Iceberg:

Business Requirements for Corporate-Wide Client/Server Applications

Over the past five years, organizations have begun to use client/server tools running on desktops to quickly develop department-wide applications.

Increasingly, however, organizations are discovering that these tools don't work for large-scale, corporate-wide applications. These applications require tools that are as easy to use as first-generation client/server tools and are robust enough to handle the complexity and performance requirements of enterprise applications.

In other words, organizations are running into a "client/server iceberg." Just what does this phrase mean? In migrating from host-based applications to client/server applications, organizations have focused on prototyping applications and have not spent as much time in analyzing their business, technical and infrastructure requirements. And based on that assumption, application developers have been using first-generation tools to deal with the tip of the client/server iceberg: the user interface and simple logic requirements of first-generation client/server applications.

But developers using these tools have begun to encounter requirements "below the water line." These are the same requirements that developers would have run into were they developing host-based applications: the ability to handle increasing levels of complexity, scalability to support increasing numbers of users, transaction control, and so on.

Next-generation or enterprise client/server tools address these "below the water line" (see Fig. 1) requirements and enable organizations to effectively deal with the client/server iceberg. This White Paper will examine the evolving requirements for next-generation client/server application development and deployment.

The Hurwitz Consulting Group, Inc. (HCG) is a technology, consulting and publishing company in Newton, Mass., specializing in the emerging market for client/server applications development and cross-platform infrastructures. HCG was founded to focus exclusively on client/server and cross-platform technology. Judith Hurwitz, president and founder, is a leading industry authority with extensive experience as an IS professional, consultant, analyst, and writer in the computer industry.

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White Paper

The Changing Face of Client/Server Development

The first generation of client/server application development tools marketed over the past five years offered graphical rapid application development (RAD) on PCs. Developers and business professionals using these tools focus on what they see on the screen rather than on the complexity underneath. And because the GUIs of these tools are quite sophisticated, developers assume that the tools are also sophisticated enough to handle other aspects of the application, such as complex business logic and data management.

Unfortunately, this assumption is invalid. The sophistication of a first-generation tool's GUI represents only the tip of the iceberg; that sophistication does not extend below the water line.

Developers have found this out the hard way. If they try to make a first-generation tool handle the requirements of increased-scale applications, they usually have to program in one or more third-generation languages (3GLs) such as Cobol, C or C++.

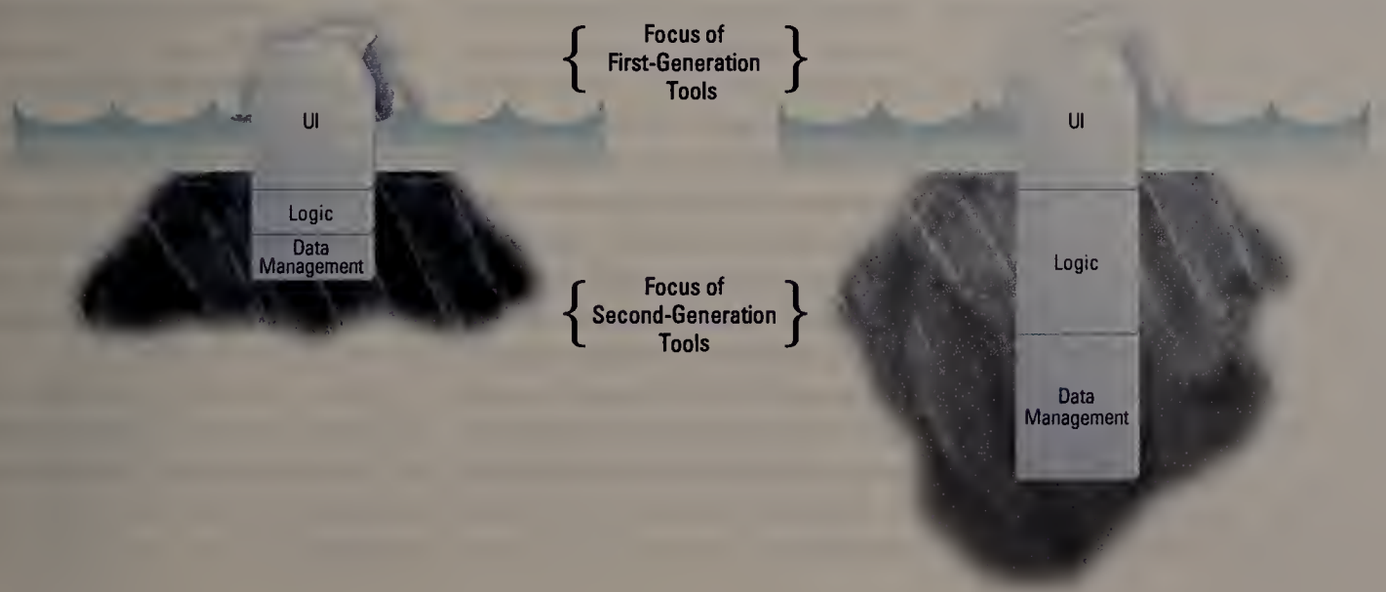
Also, most first-generation tools tightly integrate user interface code with application logic, requiring that all the logic reside on the client. If that logic involves data access, the scalability that would be provided by moving that logic to the server becomes almost impossible. This integration also forces all data to be moved across the network between client and server, resulting in a network bottleneck.

Finally, because they require the use of proprietary SQL extensions and languages, first-generation tools force the creation of applications in which the data management logic is tied to a single database; if the application needs to access another database, the developer must modify the application logic. Using a first-generation tool inhibits an application from growing in complexity because of the lack of modularity and the difficulty of adding complex programming logic (see Fig. 2).

The maturation of the application development

FIGURE 1

The Client/Server Iceberg



Creating a New Information Management System at United Technologies Automotive

United Technologies Automotive (UTA), in Dearborn, Mich., is a major developer and manufacturer of systems and components for the global automotive industry. Its five business units generated revenues of $2.7 billion in 1994 and its products are part of nearly every passenger vehicle built in North America and Europe.

Over time, with increased growth, the mainframe-based system used by UTA's Input Controls business gradually became less effective in meeting business needs, from both performance and cost standpoints. The unit, which manufactures electronic controls and switches, also faced increasing pressure from OEMs to improve data accuracy and implement new control processes.

"Because we lacked an integrated system, accessing data was often difficult, and making changes or improvements was very time-consuming," said Randy Savoie, manager of systems and process management at UTA.

"We were using manual processes that were inefficient in view of the large volume of data generated. Plus, the manufacturing operation was not integrated with financials, so it was hard to produce timely reports. There were even things we could not do, including some OEM-driven projects. It was frustrating for everyone and potentially damaging to our customer relationships."

After a reorganization of the central IS function at UTA gave the business units a mandate to determine their own IS systems, the door opened for a comprehensive business assessment. As a result, Input Controls decided to transition to a client/server architecture for cost savings and flexibility. "We called this effort Project Genesis because we laid the foundation for a new approach to managing business information," said Savoie.

After a rigorous software evaluation, Savoie and his team selected MFG/PRO, an integrated manufacturing and financial package from QAD Inc., in Carpinteria, Calif. "We were attracted to MFG/PRO because it's based on the PROGRESS Application Development Environment from Progress Software," said Savoie. "Another factor was QAD's experience in the automotive market."

Databases Consolidated

Under the MFG/PRO application package, UTA has consolidated its former databases, enabling staff at any of the division's sites to obtain information more easily and largely eliminating duplicate data entry. A key benefit is the implementation of a single bill of material system for the entire unit. In addition, when fully operational throughout Input Controls, the new system is expected to significantly reduce development and maintenance costs associated with the mainframe, resulting in projected savings of $1 million per year.



Other UTA business units have noted the success of Project Genesis; in fact, the Motors unit has also selected QAD's application package.

The system is configured with HP 9000 servers running Novell NetWare and Windows-based clients networked with TCP/IP. Day-to-day applications run on client/server. A few functions remain host-based due to processing requirements.

After a successful pilot installation in Tampa, Fla., Savoie's team has moved ahead with the implementation process. They are also doing custom development with PROGRESS to enhance aspects of the MFG/PRO product. "We're not changing source code, just building on the core application," said Savoie. "We've been pleased with the PROGRESS toolset."

According to Savoie, implementating the system has had a positive effect on the entire Input Controls organization. "Project Genesis has served as a catalyst, opening up discussions about long-term information management issues.

"With the help of QAD and Progress Software, we are establishing the infrastructure we need for a more efficient and cost-effective operation."

marketplace has resulted in a second generation of client/server development tools that not only accommodate increasing levels of complexity, but also result in increased programmer productivity across the user interface, logic and data management.

These tools also include sophisticated services to handle the development process, which typically involves teams of developers. Also, the tools' deployment capabilities accommodate a range of cross-platform enablers at the interface, middleware and networking levels.

To move corporate-wide development from the mainframe to client/server requires the same tools and capabilities that were an integral part of host development. These tools have recently begun to appear on the market to help organizations in their migration to corporate-wide client/server application development.



Developers have used first-generation tools to navigate the client/server iceberg. But they have begun to encounter requirements "below the water line."

Future Client/Server Requirements

When selecting second-generation tools for large-scale application development, organizations need to consider their development capabilities, deployment capabilities, and the flexibility of the tool to adapt to changes over time.

For example, development tools used to build corporate-wide applications must support complexities across the user interface, logic and data components of the application. In terms of deployment, the tools must be able to handle the issues presented by multiple computing platforms, increasing numbers of users, and multiple databases.

The tool must also provide flexibility over time. Products, services and business units continually evolve; development and deployment environments must mirror and support these changes. Today's departmental application may evolve into an enterprise-wide application tomorrow. One large department may be divided into two business units and become geographically split, possibly internationally. Second-generation client/server development environments are designed to handle such changes.

The next sections in this White Paper will examine the development, deployment and flexibility requirements that you should consider when choosing a second-generation client/server tool — one that will help you address the entire client/server iceberg.

Tool Requirements

When selecting a development tool for building a corporate-wide client/server application, you should consider at least three factors: the scale of the application, the overall requirements for the development tool, and the specific requirements across the user interface, logic and data components of the application.

Scale of the Application

There are many common elements for application development. There are also a variety of business tasks and requirements, which dictates that developers select different approaches and implement them using different tools.

Some companies have primarily small projects that only last a short time. For example, a company offering a one-time special product for sale with a partner would only need an application that could process a small number of orders or informational requests. Once the project is over, the application would go away. It is "disposableware."

In another company, an individual department might need to access key corporate data through a more flexible GUI. In both instances, a RAD approach with first-generation development tools is suitable to get the job done quickly and efficiently. In this situation, a high-end tool would be overkill.

Even in the context of scenarios such as these, developers should proceed with caution. Many applications are originally approached as "disposable" only to become required for longer than planned, sometimes even becoming critical to the enterprise. It is a good idea to examine the enterprise implications of an application, even if at first it seems to be one easily handled by first-generation tools.

Many organizations also want and need sophisticated and widely used applications. These applications handle complex parts of a company's business, and need to be architected for longevity.

At this stage, no one may know how much more

complex the business will become over time. Many business issues could drive significant changes in the infrastructure: a move into new channels, a merger or an acquisition, or even the forming of new partnerships. The company may double or triple if business expands, or the organizational structure itself may be in flux due to rightsizing initiatives.

An organization may be in the process of distributing responsibility for different aspects of the business to business units around the globe. To further complicate things, the company may, at a later point, decide to return to a more centralized management structure. In this case, an organization should combine extensive planning with second-generation client/server technology to develop the types of applications to meet its changing needs.

Large-Scale Development Tool Requirements

Development tools used for large-scale application development should be comprehensive and adaptive.

• *Comprehensive.* The development environment should address the entire application life cycle of design, development and deployment. Within each area, the environment should allow the developer to use a single skill set, (see Fig. 2) rather than forcing the developer to work with a variety of products that may not work well together in the future.

For example, the development environment should provide a single set of tools for dealing with an application's user interface logic and data management components. And if the developer needs to use other vendors' tools to deal with design and deployment, the environment should provide easy access to those tools by adhering to standards.

• *Adaptive.* An adaptive development environment has the flexibility to evolve as the business changes. It can also accommodate changes in user interface, databases, networks and operating systems.

An adaptive environment also abstracts or hides the underlying complexity of the infrastructure so that development organizations can focus on the business problem rather than the underlying technologies that are subject to change.

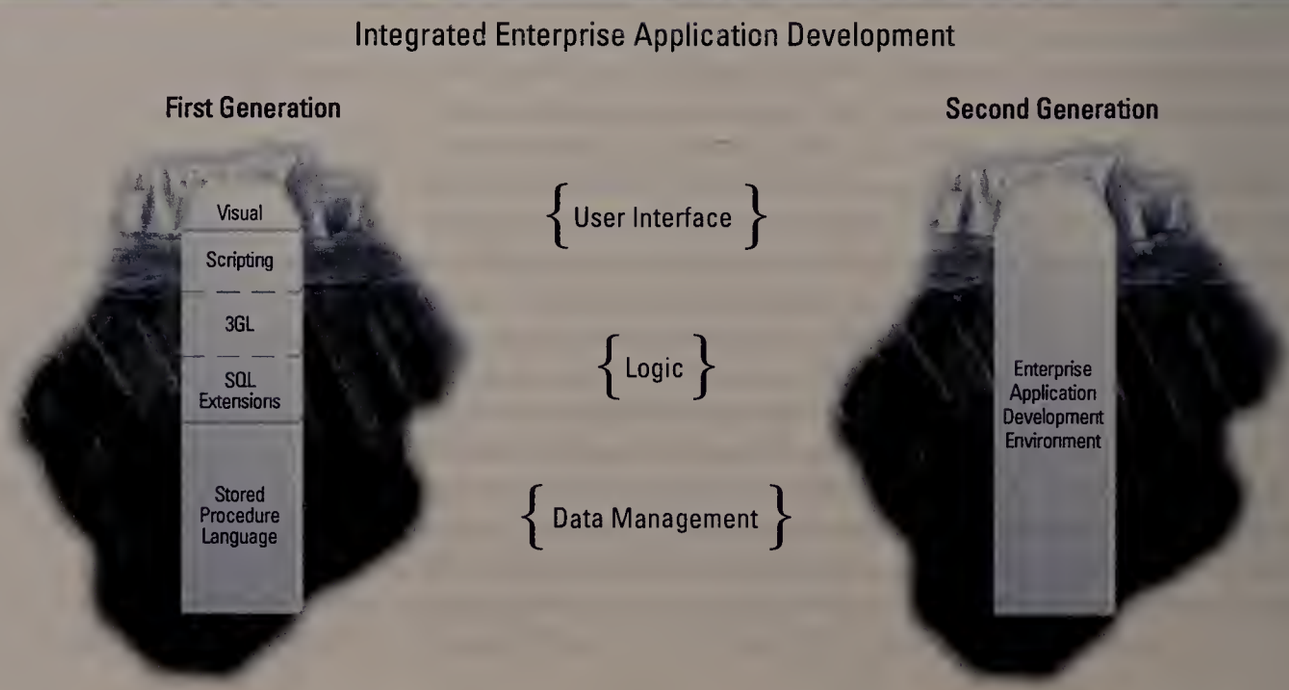
Large-Scale Development Environments

A client/server development environment must address the components present in any application: user interface, business logic and data management. The next sections in this White Paper will explore requirements in each of these three areas.

User Interface

The presentation services, or user interface, is the portion of an application that manages the way the

FIGURE 2



White Paper

Government Deregulation Propels Switch to Client/Server for Distributor Bay State Gas

For utility companies such as Bay State Gas, the largest independent distributor of natural gas in New England, government deregulation has meant two things:

1) increased competition, and

2) the accompanying need for new marketing approaches.

During the period in which Bay State Gas was in the process of formulating its strategic planning, it became apparent to the utility that its existing mainframe-based COBOL applications could not accommodate the increased level and broader range of services demanded by a deregulated market.

In comparison, Bay State Gas realized that implementing a client/server system would give it, at a minimum, several competitive advantages: to respond faster to new market opportunities, to effectively manage a larger portfolio of services, and to provide more functionality and flexibility.

Not surprisingly, Bay State Gas made the decision to transition from its aging mainframe computing system to a more responsive, more flexible and more cost-effective client/server environment.

Robust 4GL

After reviewing several possible solutions, the company selected the PROGRESS Application Development Environment (ADE), from Progress Software. The primary criteria for its choice of PROGRESS was the robustness of the product's 4GL. PROGRESS offered Bay State Gas the ability to handle all three levels of an application — user interface, business logic and data manipulation — without creating the need for its developers to either drop down to a less-productive 3GL or to write database-specific SQL code.

Implementation of PROGRESS development was accomplished on an incremental basis, beginning with a pilot program on the meter-inventory application.

According to John Doucette, vice president of corporate services at Bay State Gas, "The PROGRESS ADE and relational database enabled us to build an integrated application that eliminated the redundancy and complexity that characterized our existing application."

Other advantages that Bay State Gas found in using PROGRESS included rapid development and training, as well as lower costs.

Following the success of this pilot effort, Bay State also chose PROGRESS to develop an entire new customer information system. In this instance, the GUI-based capability of PROGRESS Version 7 was a deciding factor.

The new customer information system, which will run on HP 9000 series computers, is designed to streamline customer service by simplifying the process of navigating between applications. Thanks to a simplified user interface, representatives will be able to learn all applications — rather than just one — and provide "one-stop shopping" to customers.



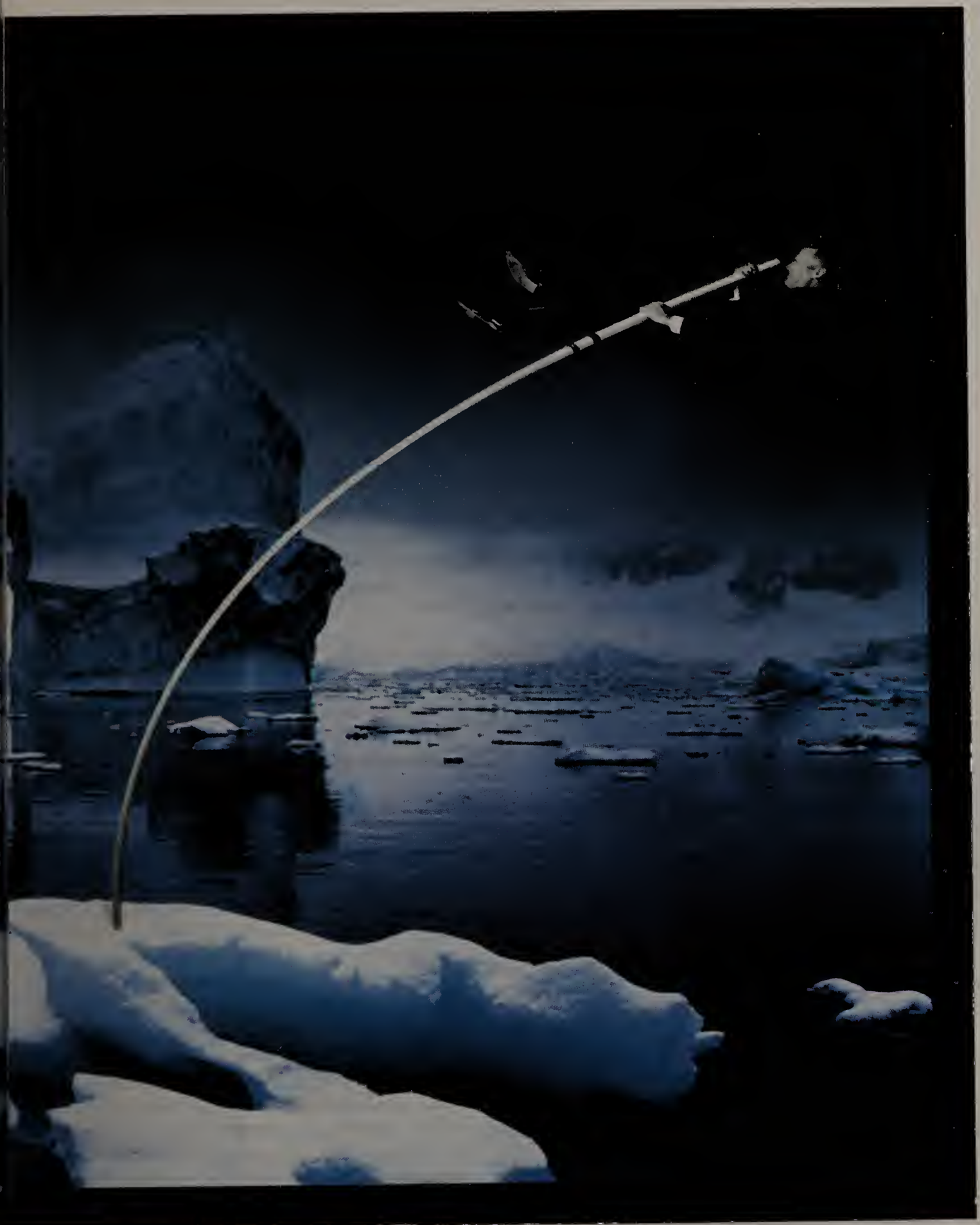
When the new system becomes fully operational this fall, 400 end users conducting over 20,000 daily interactions with customers will use PROGRESS-based applications for the company's core business functions.

> *"The PROGRESS Application Development Environment and relational database enabled us to build an integrated application that eliminated the redundancy and complexity that characterized our existing application."*
>
> *John Doucette,*
> *Vice President of Corporate Services*
> *Bay State Gas*

Doucette concluded, "At Bay State Gas, we committed to re-engineering and rewriting our entire homegrown mainframe portfolio in a little over a year.



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user interfaces with the application. Although developers may spend a lot of time on this portion, it typically represents only 15% to 50% of the total development effort for that application. First-generation tools that focus on the user interface are only addressing the tip of the client/server iceberg.

The most critical aspect of user interface development is to ensure that the visual components of the development process are separable from logic and data. Second-generation client/server tools not only provide for this separation, but also address key aspects of the visual environment, including:

- reusable user interface objects
- support for cross-platform development
- support for multiple programming models
- internationalization

When evaluating tools, organizations should examine capabilities in each of these four areas.

User Interface Objects. Most tools today offer good graphical development environments. But in selecting a tool, developers must not confuse graphical development environments with object orientation.

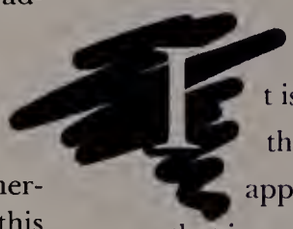
Being able to create code or an object using a graphical tool does not mean that code or object can be reused in another application or in another setting without recoding.

An object-oriented development environment allows developers to take advantage of pre-designed object components that have been built by commercial developers. Reusable user interface objects also offer organizations the ability to set standards across an organization, ensuring consistency and a common look and feel across applications . . . ultimately, resulting in improved productivity for end users.

Reusable user interface components will greatly enhance productivity because they have already been debugged and tested. Examples of reusable commercial products include pre-defined application templates designed to shortcut key aspects of complex development and custom controls designed for the Windows environment.

Cross-platform support. Over the past five years, developers and end users have moved from purely a character-based interface to a mixture of character-based and graphical user interfaces. Some developers are using a graphical environment such as Windows to build an application. However, the end users still have character terminals on their desks.

Large-scale applications require the development tool to be able to produce applications that can run consistently across these user interface environments. A development tool with a "multi-layout" capability lets developers see what the application will look like in both character and graphical environments. The tool should let a developer build the application using one user interface environment, such as Windows, and deploy that application to a user who has a character-based interface.



It is always a good idea to examine the enterprise implications of an application, even if at first it seems to be one that is easily handled by first-generation tools.

Programming models. In reality, businesses are driven by both events and procedures. Yet the truth is, most popular development tools are implemented assuming only a procedural model of development.

As organizations begin defining business events in addition to business procedures, it becomes increasingly important for a development tool to be able to easily handle both event-driven and procedural programming models. Hurwitz Consulting Group anticipates that this step will go a long way toward helping organizations build more effective applications.

Internationalization. As more corporations expand beyond their local borders, they must provide applications with screens, reports and messages in native languages. Tools that allow developers to develop a single version of an application that handles multiple languages can dramatically impact the effectiveness and timing of global applications.

Applications developed with these tools should be able to simultaneously "understand" different languages and character sets input by different users.

Application Logic

Application logic is the heart of client/server application development and represents the bulk of

the work for application developers. When evaluating tools for large-scale application development, an organization should consider the following in terms of application logic capabilities:

- modularity of design to handle complexity
- role of transactions
- object orientation
- integration with outside technologies
- database and platform independence
- the role of batch processing in client/server

Modularity. A development tool should not intertwine user interface logic with application logic, especially if scalability is an issue. Also, just because an application was designed with a second-generation client/server tool does not mean it was designed to handle increasing degrees of complexity.

Scalability comes from well-thought-out and well-structured techniques. The development tool you choose should foster the modular development of application logic, producing objects that are reusable and applications that can easily handle increasing complexity.

Role of transactions. First-generation tools have typically been used to develop either decision support applications or applications involving simple transactions or light transaction loads. Large-scale applications bring not only increased transaction complexity, but also the requirement for increased transaction loads.

A development tool should provide a structured, transaction-oriented language, which will allow developers to address the transaction requirements of large-scale applications without having to resort to conventional, low-level programming languages.

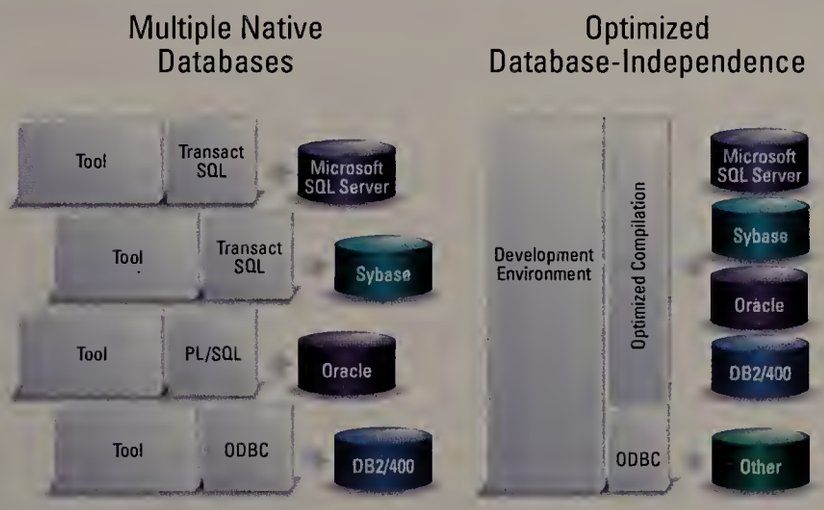
Object orientation. Object orientation in second-generation client/server environments helps mask the complexity of the underlying enterprise infrastructure and provides the benefit of reuse, significantly increasing developer productivity. In fact, organizations building large-scale applications are finding they need to design reusable libraries for use by large development teams. These reusable libraries can capture important complex business logic, reducing the chance that developers will introduce logic errors. Reuse can also dramatically speed up the development process, especially when a large-scale, complex application is being designed.

An object framework such as OLE/COM or CORBA can allow a variety of conventional and object-oriented code to be managed in a distributed way. This type of object brokering service hides the complexity of underlying technologies so developers do not need to know the details of it and can focus on the application. It also makes it easier to change environmental components without having to change the application logic.

Integration with outside technologies. For large-scale applications to be implemented at the corporate level, they must not be approached as isolated business functions. Instead, they must be able to interact with an organization's other applications and data. Furthermore, the development tool used to create these applications should provide this capability without forcing the developer to drop into C or some other low-level language.

Database and platform independence. Pilot or departmental applications often need to deal with only one database or platform. But large-scale applications must often be able to seamlessly access multiple, and possibly heterogenous, databases as well as be able to run across multiple operating systems.

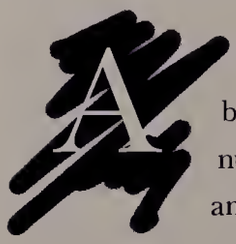
FIGURE 3



For example, corporate-wide client/server applications often need to access and update legacy data as well as newer heterogeneous data sources across the enterprise. This data is found on a variety of flat files, hierarchical mainframe systems and relational databases running on many hardware platforms.

Therefore, when selecting second-generation client/server tools, it is important to evaluate their abilities in these areas. A second-generation client/server tool must allow the developer to develop a single set of logic that will work across multiple databases and/or operating system platforms.

Role of batch processing. An often overlooked aspect of corporate application development is support for batch processing. Even in an event-driven client/server world, there are requirements for batch reporting and processing.



pplications must be able to scale both up and down in platforms, number of users, size of database and application complexity.

For example, large financial consolidation reports should be run off-line. A second-generation client/server tool should be able to handle batch processing and should also let a developer address this part of the application using the same skill set required to build all the other parts of the application.

Data Management

In terms of data management, the development of large-scale applications dictates the need for a consistent repository for data definitions and business rules. This repository should be seamlessly integrated into the development tool, to ensure maximum developer productivity. Make sure that the development tool you choose provides such a repository.

Further, as part of the overall modular architecture of client/server, data should be separate from application logic and business rules. This separation allows data to change without affecting the integrity of the application.

When data is integrated with application logic, the entire application must be tediously changed and modified each time a data element changes. Separation of data from application logic provides a faster way to maintain and change applications.

Pilot or departmental applications typically need to access only a single data source. Large-scale applications, however, often involve transactions that span multiple heterogeneous data sources. Because this requirement is below the water line of the client/server iceberg, first-generation client/server tools cannot address it without significant low-level language coding on the part of the developer.

In contrast, effective second-generation client/server tools handle this challenge by providing optimized database independence that does not rely on embedding RDBMS-specific SQL or a "lowest common denominator" approach, such as ODBC. (See Fig. 3.)

Deploying Large-Scale Client/Server Applications

It is not enough that a second-generation client/server tool can handle the development requirements of a large-scale application; you must also consider the deployment requirements presented by this class of application. You must consider:

- Portability across environments and platforms
- Scalability and support for users
- Flexibility in responding to changing user needs or business conditions

Portability. When organizations started moving from the mainframe as the only development platform for applications, they purchased a variety of platforms, ranging from desktop development systems to large-scale minicomputers and servers.

Client/server applications that support all these users must accommodate a variety of hardware options, networks, operating systems, databases and communications protocols. The development environment must be architected to hide, or make transparent, the underlying physical environment, so deployment can be accomplished as easily on a LAN as in a large-scale server environment. (See Fig. 4.)

Scalability. Scalability in deployment has different implications than scalability of development. A company that needs to support thousands of users at its main site may only need to support a handful of users at a regional site. Therefore, in deployment, applications must be able to scale both up and down in terms of platforms, number of users, size of database and application complexity. It is not unusual for one organization to have many situations. The development environment must handle a wide variety of implementation and deployment situations.

Flexibility. Although pilot or departmental appli-

White Paper

cations often have clear requirements, large-scale applications must anticipate change in a number of areas. Tools used to build these applications must be able to respond to these changes without requiring developers to change the application.

Changes typically required by large-scale applications include, end user ad hoc reporting, the ability to support new and different types of databases, and the internationalization of an application.

Conclusion: Navigating Around the Iceberg

All applications have development, deployment and flexibility requirements. And when organizations build pilot or departmental applications, it is often appropriate for them to use first-generation client/server tools to address those requirements.

However, these tools do not address the requirements below the client/server iceberg water line. It is these requirements that developers face when building large-scale applications. Therefore, before selecting a tool, it is critical to think about how an application's requirements will change over time.

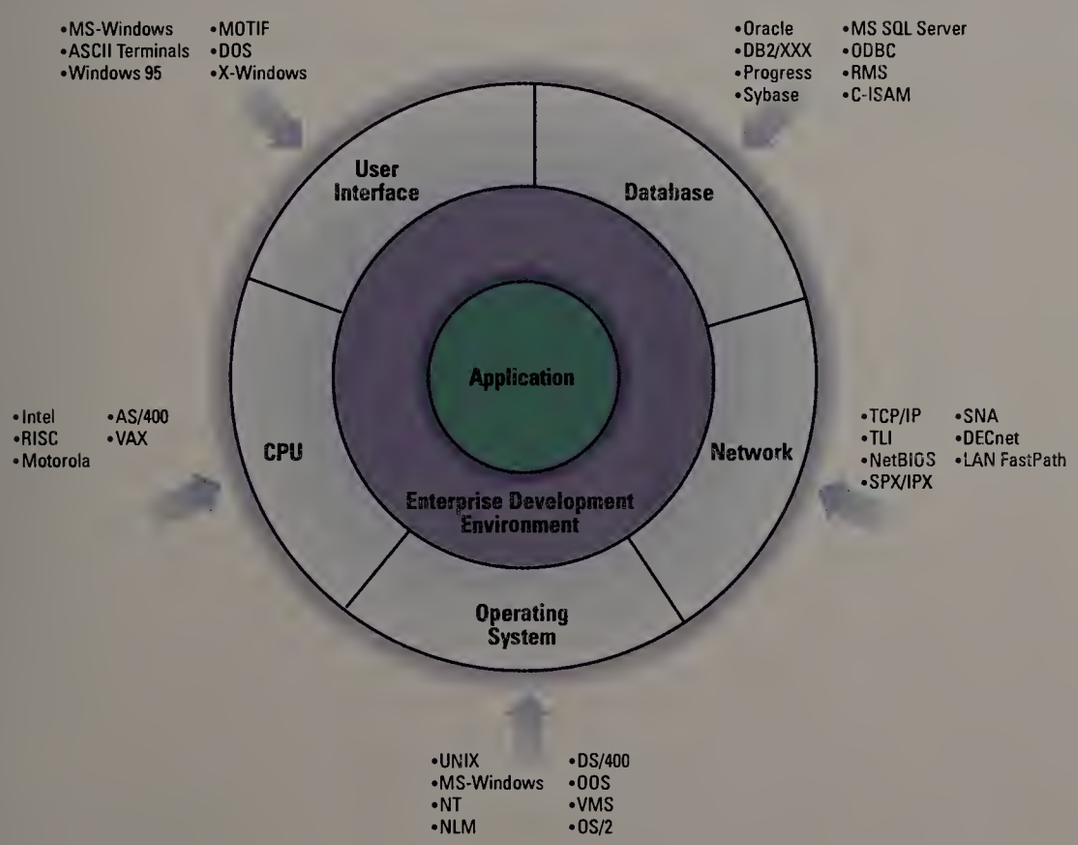
Corporate-wide client/server computing provides the infrastructure that begins to allow organizations to evolve in a flexible way without the massive disruptions of earlier computing architectures.

Second-generation client/server development and deployment environments are architected with the assumption that businesses — and the applications that run them — will change constantly. They are being designed to provide organizations with highly flexible, distributed and managed environments.

Understanding the requirements of large-scale applications and then choosing the appropriate second-generation client/server development tool are the keys to navigating around the client/server iceberg. Be sure to look below the water line before you choose an application development tool.

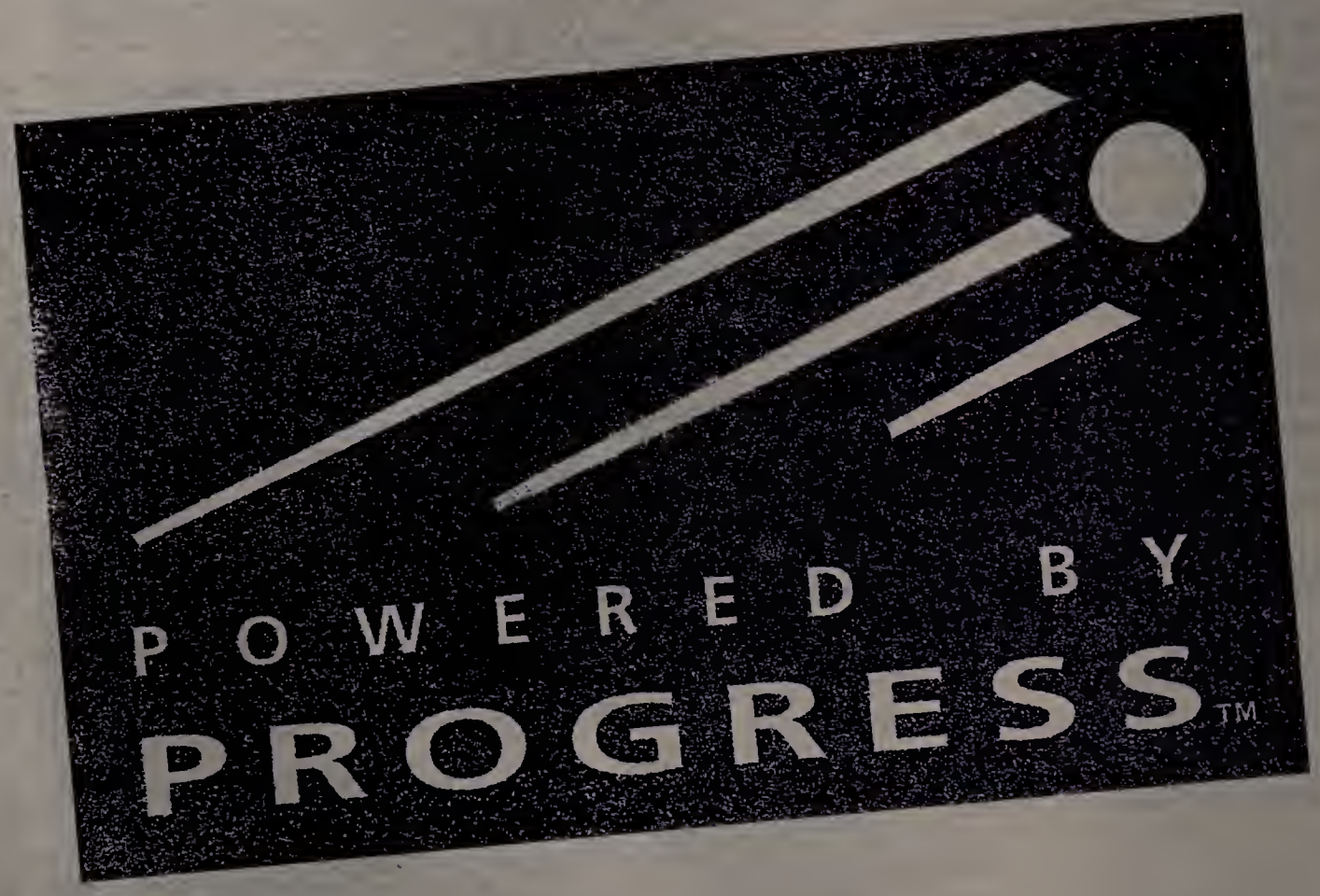
FIGURE 4

Managing Deployment Complexity



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New Products

Crystal Computer Services, Inc. has announced Crystal Reports 4.5, a 32-bit version of its data access and reporting tool for PC and client/server environments.

According to the Vancouver company, Crystal Reports 4.5 features enhanced graphing with customizable graph types and import and export capabilities for Notes. It also supports Microsoft Corp.'s Access 2.0 OLE picture fields and Borland International, Inc.'s Database Engine. It can export to Microsoft's Excel 5.0.

Crystal Reports 4.5 runs on Windows platforms, including Windows NT, Windows 3.1 and Windows 95.

Crystal Reports 4.5 costs $195.

▶ *Crystal Computer Services*
(604) 681-3435

Alpharel, Inc. has announced the latest release of its suite of enterprise image manipulation tools: View, Markup and Edit.

According to the San Diego company, the latest release has a pan-zoom viewing effect that allows operators to set initial load pan-zoom locations for all documents. Other new features include improved measurement units, support for multipage TIFF files, set markers, tool tips, flexible measurement tools and faster edit/crop capabilities for resizing.

The tools also support True Type fonts on Windows and Speedo Outline fonts on Unix.

Pricing for View tools starts at $650; Markup tools start at $950; and Edit tools start at $1,350. Price reductions are available for quantity purchases.

▶ *Alpharel*
(619) 625-3000

Blueridge Technologies, Inc. has announced that its Optix Network Document Management System now supports SPARC-based servers from Sun Microsystems, Inc. running the Solaris operating system.

According to the Flint Hill, Va., company, the document management system offers workflow, imaging, archival/retrieval and natural language text search for Macintosh and Windows-based clients. The system can be scaled from an entry-level SPARC to an enterprisewide application running on a Sun SPARCserver with multiple processors.

Pricing for the Optix Network Document Management System (with Sun SPARCserver) starts at $150,000 and includes Optix server software, client software for both Macintosh and Windows-based PCs and installation.

▶ *Blueridge Technologies*
(703) 675-3015

Pacific Data Products, Inc. has introduced the Pacific DirectNet print server.

The Pacific DirectNet print server supports the Dynamic Host Configuration Protocol (DHCP) for Microsoft Corp.'s Windows NT networks. According to the San Diego company, DHCP support provides a single configuration protocol for all network devices and lets users on a Windows NT network print to any network printer via the TCP/IP protocol.

Pacific DirectNet print servers feature multinetwork compatibility, SNMP support and flexible setup configurations.

Pricing for the Pacific DirectNet print server starts at $199.

▶ *Pacific Data Products*
(619) 552-0880

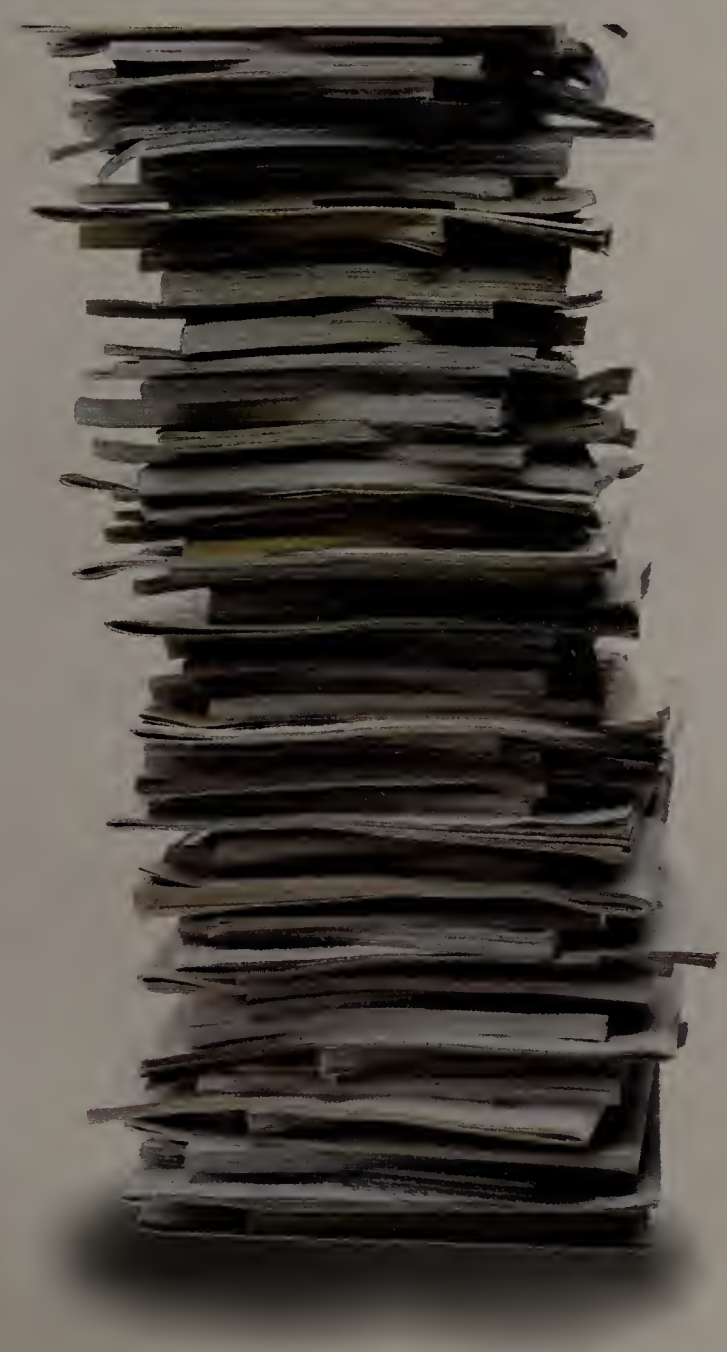
Executive Technologies, Inc. has announced SearchExpress/Legal Document Imaging 3.6.

According to the Birmingham, Ala., company, SearchExpress/Legal Document Imaging 3.6 performs optical character recognition (OCR) on scanned legal documents and lets users perform searches across multiple cases. It also lets users perform redacting, bates stamping and automatic archiving. It allows attorneys to white out portions of a page before printing the page or giving it to opposing counsel.

The product features fuzzy logic searching to find documents despite OCR errors and ranks the retrieved documents by presumed relevance, concept searching and boolean searching.

SearchExpress/Legal Document Imaging 3.6 costs $5,995 per server and $495 per concurrent network user.

▶ *Executive Technologies*
(205) 933-5494



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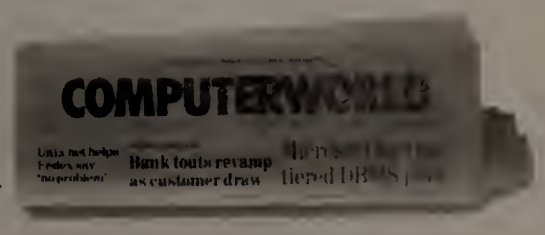
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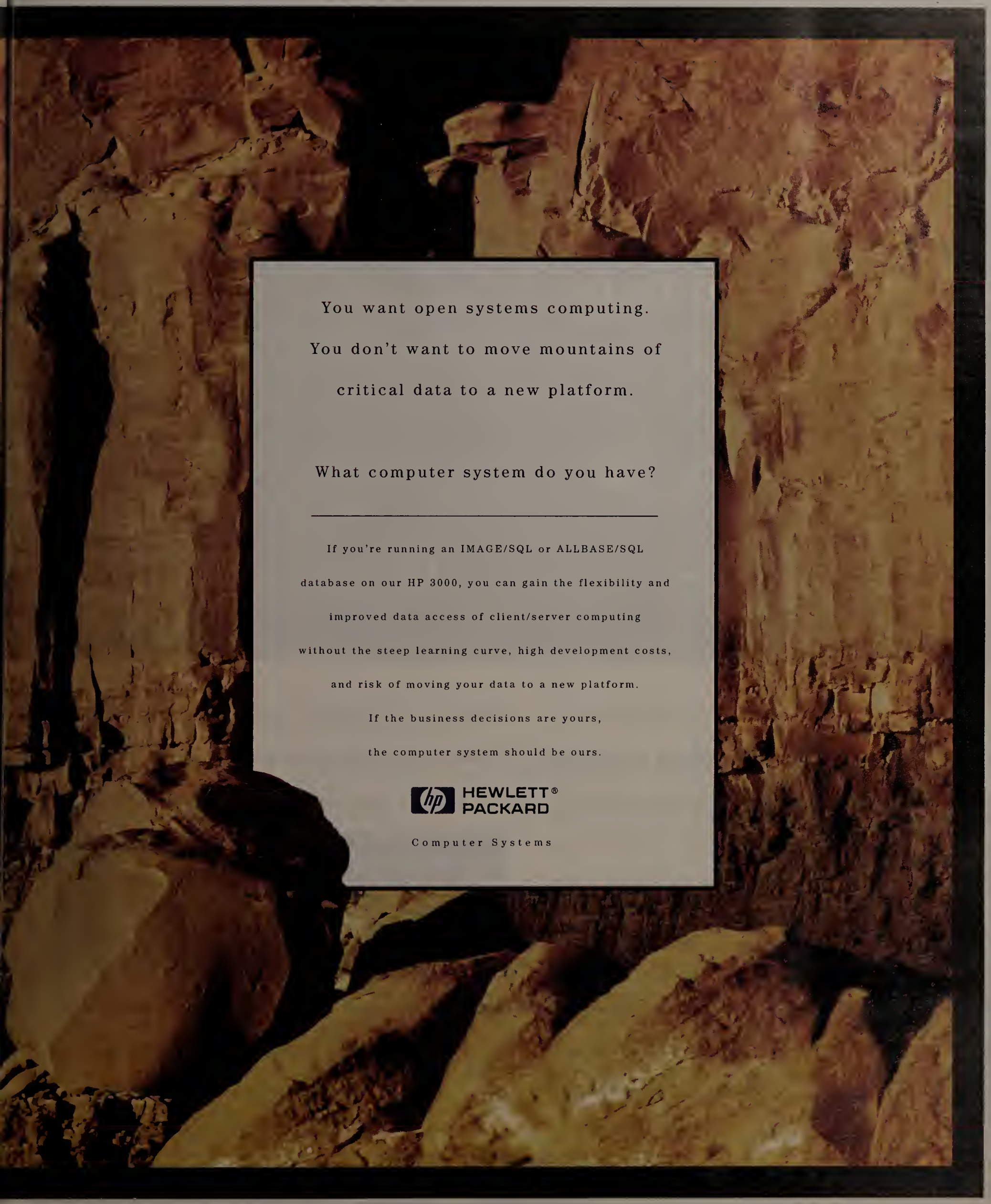
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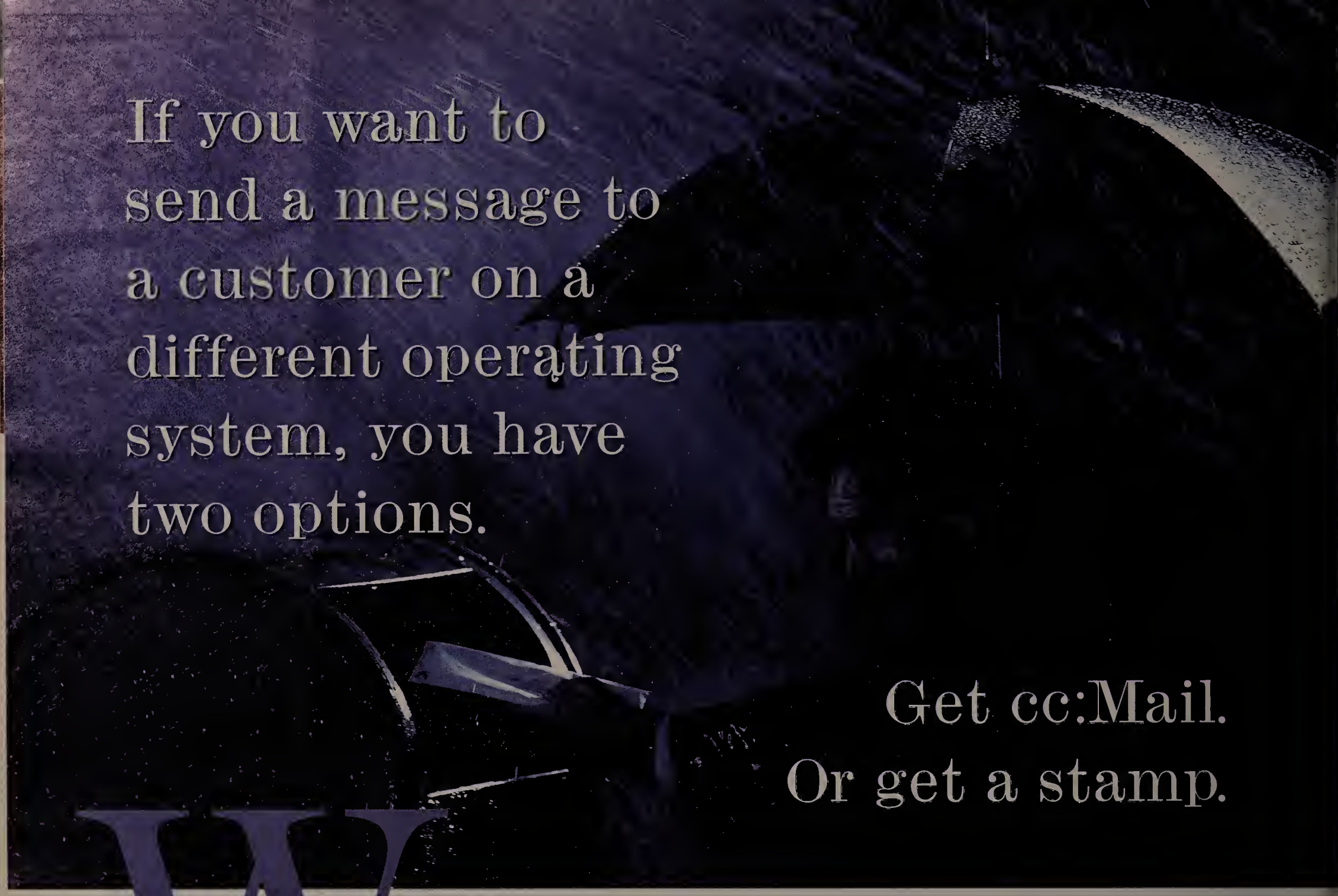


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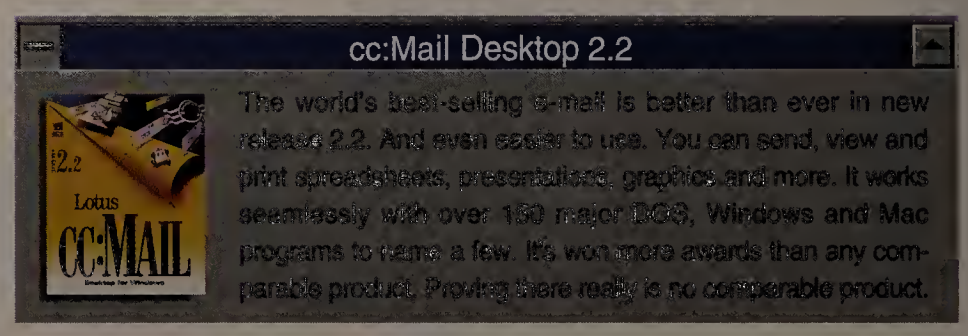


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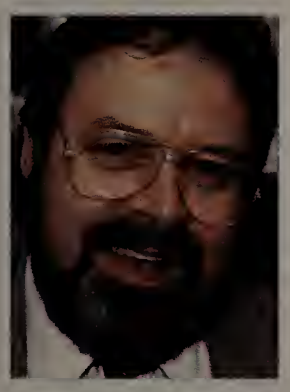
'net/Notes tandem may go head-to-head

By Suruchi Mohan

Notes or the Internet?

For now, at least, executives at Lotus Development Corp. can call them complementary. But the future may see Notes, Lotus' groupware application development platform, engaged in direct competition with the Internet.

There are numerous similarities. Notes, despite providing a powerful platform for application development, is primarily a tool for information sharing. So is the Internet. Both provide bulletin board services and a forum for publishing and posting information.



First Albany's Barry McCurdy *calls the Internet 'a nice adjunct to Notes, particularly with E-mail'*

"Most organizations use Lotus Notes as a glorified E-mail and bulletin board service," said Mark Gibbs, president of Gibbs & Co., a consultancy in Ventura, Calif. While the primary function of Notes is groupware, Gibbs said, Notes is largely used for secure information sharing. He added that Notes has "some good applications, but the cost per seat of Notes and the implementation time are significant."

Cheaper choice

While Notes clearly has the advantage of security, many organizations already use the Internet as an inexpensive way to handle communications.

"Web technology is an evolving competitor [to Notes]," said Doug Ritchie, vice president of information integration and access at Advanced Micro Devices, Inc. in Sunnyvale, Calif.

He said his users wanted a Web browser on the desktop, and providing that was easier to do and more economical than giving each of them a copy of Notes. Whether Notes could be replaced by the Internet is unclear, but Ritchie said security is being developed for the Internet.

At Ernst & Young in Irving, Texas, John Parkinson, a partner at the company, is using the Web for knowledge management.

Ernst & Young publishes volumes of reference information in various forms. "To link things together, you have to deal with large blocks of text. [Hypertext Markup Language] is a powerful way to do that," Parkinson said.

Web's the way

Companies are increasingly seeing the Web as a cost-effective way to perform many of the functions of Notes:

- TRAINING
- KNOWLEDGE MANAGEMENT
- COMPANY BULLETIN BOARD

While Parkinson said he could put all the information into one database, doing so would require users to have too much knowledge about that database.

"With the Web, it is more easily searchable and browsable," Parkinson said, adding that the Web also allows him to put links between pieces of content. "We tried it with Notes for a while and could do so to some extent; HTML makes it easier."

But most observers say that for now, the lack of security on the Internet prevents it from being a competitor to Notes. Companies will not entrust their internal communications to prying eyes on the Internet, though they may use the technologies in conjunction with each other.

"Notes addresses firms with big budgets or tremendous amounts of discipline in implementing technology. [The] Web is cheaper for information sharing."

— Mark Gibbs, President, Gibbs & Co.

"We view [the] Web as a complement to Notes," said John Schulz, senior project manager for groupware at US West Management Information Services in Englewood, Colo.

"Notes is used as a management and publishing tool for [our] internal Internet," he said. That is because not all employees have Notes, but many have Internet browsers.

'net moves

Like others, First Albany Corp. has begun Internet implementation.

"We will use the Internet as a nice adjunct to Notes, particularly with E-mail," said Barry McCurdy, senior vice president and director of research at the Albany, N.Y., investment bank.

Lotus, however, is not worried about losing Notes users to the Internet, either now or over the long term.

"We see the Web with collaborative capabilities, and Notes can publish data on the Web," said Mike Zisman, a Lotus vice president in Cambridge, Mass. "The Web will be an enormous accelerator of collaborative computing and make the Notes server a superset of the Web."

Wireless LANs improve with Netwave upgrade

By Mindy Blodgett

■ Xircom, Inc. last week announced a software upgrade for its wireless LAN system that gives users faster and more efficient roaming capabilities.

The Xircom system comprises a CreditCard Netwave Adapter and a Netwave Access Point. The Netwave Adapter achieves indoor ranges of up to 150 feet, using frequency-hopping, spread spectrum radio waves. Netwave Access Point lets users seamlessly connect wired and wireless corporate LANs.

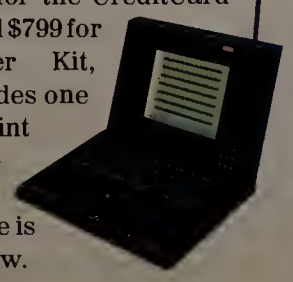
Netwave 2.5 offers a throughput of 45K bit/sec., which is 40% to 60% faster than the earlier version. The data rate is 1M bit/sec. It also offers seamless roaming between access points, according to Xircom in Thousand Oaks, Calif.

Harry Powell, an information systems manager at Modern Technologies, a health and insurance industry consulting firm in Atlanta, said the speed is a plus for his company's 100 notebook users.

"Sometimes we [meet] in a hotel, and we need to move to a breakout room," Powell said. Wireless LAN capability makes this easier to do.

"They have done the most with integration," said Val Sribar, an analyst at Meta Group, Inc. in Stamford, Conn. "And they have priced it to make the product interesting."

For current users of the hardware, the software upgrade is free. For others, Netwave 2.5 costs $399 for the CreditCard Adapter and $799 for the Starter Kit, which includes one access point and one adapter. The upgrade is available now.



Airlines take to the airwaves to deliver travel information

By Mindy Blodgett

Passengers arriving at some of the nation's busiest airports are increasingly met not by chaos but by efficient curbside agents who wield handheld computers supplying everything from ticketing information to in-flight menu information.

Thanks to wireless technologies that can transfer data in a two-second flash, those long lines for baggage check-in, seat confirmation and gate information might soon be history.

The latest example of this capability hails from the technology arm of American Airlines, which offers its wireless communications product to the 64 airlines that use Sabre, the world's largest reservation and computer system.

Observers say the Sabre wireless system — along with those developed by other airlines — will provide significant time-saving and paperwork reduction benefits to the travel industry.

Sabre Wireless is a mobile product designed to supply real-time information on flights, weather, types of planes and other travel news. Eventually, Sabre plans to offer it to all of the system's approximately 30,000 subscribers, including travel agents, hotels and car rental agencies.



The Sabre wireless system *enables remote check-in, ticketing and access to flight and weather information*

"The possibilities are endless on how this technology can be used," said Chris Serafin, a principal in airport systems at Sabre De-

Airlines, *page 55*

Digital rolls out more virtual LAN gear

EnVISN architecture leads competitive net strategy

By Michael Goldberg

Digital Equipment Corp. is in the midst of an 18-month rollout of virtual LAN products.

The company's emphasis is on routing technology that handles users distributed throughout an organization but manages the routers from one central point. This should ease the flow of traffic for users and make their use of computing hardware more efficient, according to observers.

When information systems staffers consider networking gear, companies such as Cisco Systems, Inc., Bay Networks, Inc., Cabletron Systems, Inc. and 3Com Corp. typically come to mind. While these companies rank as the sales leaders, Digital comes in third in LAN switches and fourth in routers and switching hubs, according to International Data Corp. in Framingham, Mass.

If Digital has its way, this rollout will help it grab an even bigger chunk of these markets.

What they're up to

digital™

Since Digital's announcement of its enterprise Virtual Intelligent Switched Networks (EnVISN), the company has offered new switches for distributed routing between virtual LANs and a series of products to connect remote users.

Other scheduled rollouts include the following:

End of 1995

Software to manage network policies on virtual LANs, such as those defining users and declaring users' access levels

First half of 1996

Software to build Class 3 virtual LANs based on the network address of each user

In the game

Analysts say that Digital, which unveiled its enterprise Virtual Intelligent Switched Network (EnVISN) architecture in April, has articulated a strategy that keeps pace with the competition — which is also unveiling paths to virtual networks. Digital has a leg up, observers said, because it sells a broader menu of products than most networking suppliers.

Over the next year, the company will introduce new versions of its ClearVISN virtual LAN management software. Digital also plans to unveil a series of desktop, workgroup and enterprise switches.

"Digital is finally catching up and starting to play a leadership role" in networking technology, said Michael Howard, president of Infonetics Research, Inc., a network consultancy in San Jose, Calif. One major factor behind Digital's networking success, he said, is lower prices. "In the old days, Digital laid out a higher price spread for [their network products]. Today, their prices are more competitive," Howard said.

The decision to offer distributed routing is important in the virtual LAN contest, analysts said. Of the leading networking product vendors, Cabletron emphasizes a distributed routing format while 3Com, Bay Networks and Cisco use a centralized routing environment, according to a report by McConnell Consulting, Inc. in Boulder, Colo.

Digital campus

Quinnipiac College in Hamden, Conn., is spending $200,000 on Digital hubs, switches and routers to set up a campus network linking the college's administration to its five undergraduate and graduate schools.

Digital takes distributed route

At Children's Hospital in Boston, senior network analyst Jim Hutchinson said Digital's distributed network model helped him consolidate a purchasing application and operating room schedules onto one server instead of three. He said he used a DEChub 900 multiswitch as a backplane and a DECrepeater 900 fp switch to move some users from an Ethernet network to an Fiber Distributed Data Interface-based system.

"The thing that appeals to me is the distributed architecture they chose," Hutchinson said. "A centralized model puts too much emphasis on a single point of failure, and it also increases the management of traffic" on the network.

Internetworking vendors flood switching market

Raft of announcements puts technology in choice position

By Laura DiDio

A spate of new switch offerings from a variety of small and midsize vendors is a strong indicator that switching has arrived as *the* mainstream LAN bandwidth booster of choice for internetworking users.

No fewer than six 10M/100M bit/sec. LAN and backbone switches have made their way to the market in the past few weeks. The trend is expected to escalate in the next two months and culminate at the Networld/Interop '95 trade show in September, analysts and users said.

Among those that unveiled wares in recent weeks were Intellicom, Inc. in Chatsworth, Calif.; NetWiz Ltd., a start-up in Haifa, Israel; Newbridge Networks, Inc. in Herndon, Va.; Retix, Inc. in Santa Monica, Calif.; and Standard Microsystems, Inc. in Hauppauge, N.Y.

"There's a feeding frenzy going on right now. Just about anyone who calls themselves an internetworking supplier is introducing a new switch," said Eric Hindin, a senior consultant at Strategic Networks Consulting, Inc. in Rockland, Mass.

"It's definitely a buyers' market," Hindin said. "But users must take care to buy switches with a minimum of two high-speed ports and built-in network management. Otherwise, they might find themselves stuck with a cheap, bare-bones product that doesn't have adequate performance for their needs."

Worth it

Charlie Robbins, an analyst at Aberdeen Group, Inc., a Boston-based consultancy, said the cornucopia for users lies in the enhanced functionality of the latest switch offerings rather than in pricing, which is competitive but not declining.

This suits users such as Miguel Escobar, manager of voice and data at South Coast Air Quality Management District in Diamond Bar, Calif. He said the extra bandwidth is worth the price for the extra throughput his 1,000 users gain from their Bay Networks, Inc. 10M/100M bit/sec. switching hubs.

"We're squeezing every bit of bandwidth out of our switches to support an increasing number of advanced applications like imaging," Escobar said. "Up to 50% of our users can be classified as power users; our bandwidth requirements are scaling upward so quickly that we've had to segment our networks several times in the past 12 months alone."

"Our bandwidth requirements are scaling upward so quickly that we've had to segment our networks several times in the past 12 months alone."
—Miguel Escobar, South Coast Air Quality Management District

According to Strategic Networks' upcoming Global View 2000 Quarterly Report, due at the end of the month, plenty of other bandwidth-hungry users are driving the popularity of switches to an all-time high.

The report, based on a survey of more than 100 large corporate customers, indicated that switching hub purchases will outpace all other high-speed technology buys at both the departmental and backbone levels by a 3-to-1 margin.

Intellicom, for example, added port switching capabilities to its current OfficeStak series of stackable hubs via its High-speed Switching Module, the HSM III. Up to three HSM IIIs can fit in a single chassis, and up to three chassis can be stacked to give users a maximum of 48 switched Ethernet ports.

NetWiz is shipping its flagship product, the TurboSwitch 2000. Available in either a four-slot Mini Chassis or a 20-Slot Maxi Chassis, the TurboSwitch can switch from eight to 120 LAN ports. It has full redundancy and supports the industry standard Simple Network Management Protocol.

Industry veterans such as Newbridge Networks and Retix, meanwhile, have begun shipping enhanced versions of products. Newbridge is addressing the high end of the market with Release 3.0 of its 36150 MainStreet ATMnet with enhanced video capabilities. Retix has bolstered the functionality of its SwitchStak 5000 with Virtual LAN capabilities and offers support for up to 3,000 users and 10 switched Ethernet ports for $399 per port.

Finally, SMC introduced the EliteSwitch ES/1 ATX, a backbone LAN switch that offers 1.6G bit/sec. bandwidth and supports Fiber Distributed Data Interface, 100Base-T "fast" Ethernet and 100VG-AnyLAN.

Switches sizzle in summertime

Summer has traditionally been a slow period for product introductions, but the switching hub market has seen a flurry of products introduced in July. Some of the most notable include the following:

Company	Product	Price
Intellicom	HSM III high-speed switching module for the OfficeStak hubs	$2,750
NetWiz	TurboSwitch 2000	Starts at $14,880
Newbridge Networks	36150 MainStreet ATMnet Release 3.0	Not yet available
Retix	SwitchStak 5000	$3,995
Standard Microsystems	EliteSwitch ES/1 ATX	$14,950

Here come more Web tools

Products emerge to manage and analyze site traffic

By Gary H. Anthes

Driven by the explosive popularity of the Internet's World Wide Web, vendors are rushing to market new Web services and upgrade existing ones. Many of these products are aimed not at Web end users but at those who create and maintain Web sites.

Recently Open Market, Inc. in Cambridge, Mass., introduced a product that allows Web site system administrators and business managers to analyze traffic to their sites, helping them optimize their Web offerings from technical and business standpoints.

Simultaneously, Internet Profiles Corp. in San Francisco announced a third-party Web audit service that can be used to support Web advertising rates and evaluate the effectiveness of a Web site.

Open Market's WebReporter uses log files maintained by most Web servers to produce reports detailing accesses to different parts of a Web site — areas containing product information, company data or pricing, for example — so that managers can determine the relative popularity of those features.

Besides counting the number of "hits" on a site, WebReporter tracks what types of browser were used, the Web sites from which the requests originated and the start and end times of the requests. Users can create customized reports incorporating any of 18 data fields.

TriNet Services, Inc., an Internet services firm in Raleigh, N.C., is beta testing WebReporter. It plans to offer standard and user-specified reports to its customers, including companies such as First Union Corp. and Northern Telecom, Inc. that have Web sites on TriNet servers.

"Its main advantage is its ability to build data over time so you don't have to process huge log files," which can be as big as 40M bytes, said Andy Schwab, a vice president at TriNet.

WebReporter can generate reports by Web users' geographic area and domain — such as commercial, government or education. It can also cross-correlate data to show, for example, whether a certain kind of information is being sought by existing and prospective customers or competitors.

WebReporter is priced at $495 and runs on major Unix servers.

New Yahoo

Yahoo, the popular free Web guide tool and search engine from Yahoo Corp. in Mountain View, Calif., got a face-lift and some new features last week. The software now offers users free access to news from Reuters NewMedia, Inc., faster navigation and colorful new graphics.

Yahoo also now carries advertisements from five companies offering online shopping and other services. Advertisers will underwrite the cost of the Reuters access, a Yahoo spokeswoman said.

Yahoo gets 3 million "hits" a day from 225,000 different hosts, said Tim Brady, director of marketing at the company. To help analyze this activity and validate it for advertisers, Yahoo has contracted for Internet Profiles Corp.'s third-party audit service, Brady added.

— Gary H. Anthes

Airlines

CONTINUED FROM PAGE 53

cision Technologies.

Sabre Wireless uses Sabre's own emulation software, which is installed on IBM ThinkPads and communicates via McCaw Cellular Communications, Inc.'s AirData Cellular Digital Packet Data (CDPD) network. The mobile device was developed by The Sabre Group, a division of AMR Corp. in Fort Worth, Texas, which owns American Airlines.

"We envision curbside check-in with the product, servicing passengers much more quickly. For instance, being able to send ticket agents down to the cruise docks in Miami to check in passengers, sell tickets, whatever," Serafin said.

"We are looking at adding mobile printing capabilities. Hotel guests could be processed from hotel lobbies," he added. "We are talking about movable, virtual travel offices."

Serafin would not release pricing information for the system but said it will include the ThinkPads, which cost approximately $4,000 each, and a flat rate for unlimited airtime on the AirData network.

"This is a real success story and a great thing for the wireless industry in general," said Virginia Brooks, an analyst at Aberdeen Group, Inc. in Boston. "This kind of use goes a long way in building customer trust in wireless uses, one of the stumbling blocks to such technologies as CDPD."

The only cloud has been the slow deployment of CDPD networks nationwide, but Serafin said Sabre is confident the network rollouts are accelerating.

American Airlines plans to start using the system at the Dallas and Miami airports and at Kennedy Airport in New York in the next couple of months. In addition, the airline is testing wireless systems in European airports and looking at installing wireless kiosks. Those kiosks would give passengers last-minute travel information as well as offer the network to mobile workers seeking access to the home office.

One, two

Sabre officials say it takes about two seconds to transmit data to users of the handheld devices on the Sabre Wireless system.

American is not the only airline taking the wireless approach, however.

Delta Air Lines is using a spread-spectrum wireless technology at Kennedy Airport and in Atlanta. And Southwest Airlines, the first carrier to offer a ticketless travel system one year ago — when rival airlines blocked it out of the Apollo and System One reservation networks — has devcloped its own radio spread-spectrum wireless LAN information system.

Commentary

Mitch Betts

Telecommuting: The dark side



The telecommuting backlash is here. Sprinkled among the gee-whiz articles about the virtual office are thoughtful reports about the downside.

Earlier this year, we saw the *Fortune* column headlined: "Let's hear it for the office. Work at home? Not me. I want to be part of the daily pageant, the drama, the morale-building community around the watercooler."

Similarly, Neal Thornberry, a professor of industrial psychology at Babson College in Babson Park, Mass., says the virtual office may be virtual death for your career because telecommuters can't play the game of office politics.

An article in *Futurist* magazine warns that telecommuting "portends an environmental disaster of the first magnitude." Why? Because modem-toting expatriates from the city will buy all the rural open space and turn it into Yuppie homesteads that destroy forests and streams.

Not for tightfisted

For IS managers, the most eye-catching report comes from Forrester Research in Cambridge, Mass., which finds that outfitting the teleworker isn't cheap. The cost to equip telecommuters exceeds $4,000 for initial installation and $2,100 in annual expenses.

"Productive telecommuters must have turbocharged technology," says Forrester analyst David Goodtree. "Hand-me-down PCs and antiquated modems don't cut it when connecting to the corporate network."

Goodtree's research indicates that most telework will be done by "white-collar workhorses" who squeeze in a few extra hours of work at night, on weekends and while traveling. For the remainder of the decade, full-time telework will just be an asterisk in corporate statistics.

So, the backlash is here — and that's good news. The hype behind telecommuting has been fueled by Utopian dreams and deceitful photos of telecommuters lounging by the pool or working in their robes and slippers. Artificial intelligence and the Internet also rode waves of hype until the backlash slapped everyone back into reality.

Let's hope the telecommuting backlash will do the same and lead to more realistic thinking about when telecommuting works and when it doesn't.

For starters, the lounge chair photos should be banned and several telemyths debunked. One persistent myth is that telecommuting replaces day care for children. Every parent knows you can't do sustained, intensive business work while caring for small children. What telecommuting *can* do is give you an hour or two more with your kids because you're not stuck in traffic on the freeway.

Another myth is that full-time telecommuting will become ubiquitous. Telecommuting is not right for every employee or every type of job — or even the majority of jobs.

Telecommuting also isn't an all-or-nothing option. In fact, doing it one or two days a week is often better than full-time telecommuting because telecommuters can still get face-time with coworkers and supervisors.

Out of sight, not out of mind

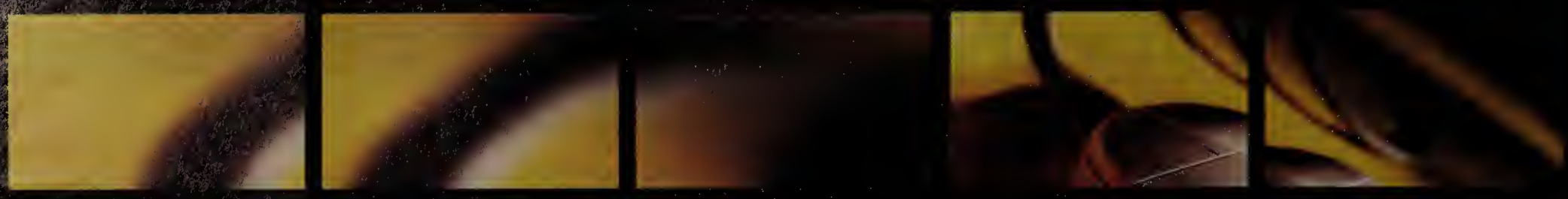
The big mama of all telemyths is the Neanderthal view of many managers that workers out of sight aren't really working.

Teleworkers report they are actually *more* productive. One reason is they face fewer interruptions than in the typical office. And only high-caliber employees are allowed to telecommute in the first place, and they want to prove they're really working.

But that leads to another dark side: Remote workers often work *too much*, thus running afoul of overtime rules and failing to separate their work and personal lives.

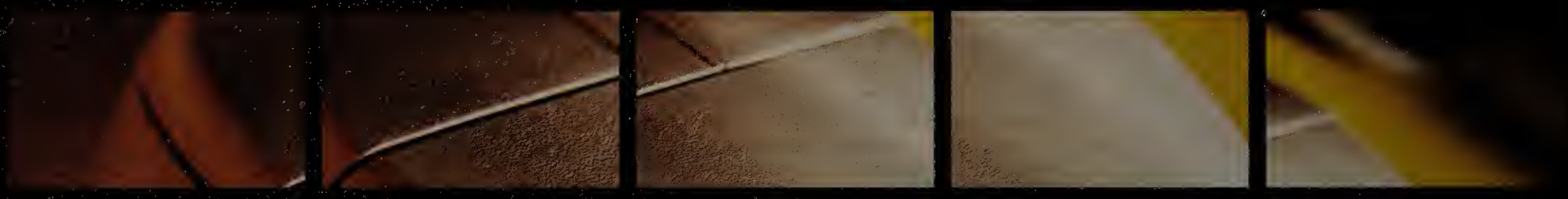
If nothing else, we've learned there are pros and cons to telework, but it can be highly successful if there is sustained management attention and training for employees and managers. Telecommuting will find its niche in corporate America once it emerges from the fad-of-the-month club and managers apply the practical lessons learned from countless pilot projects.

Betts is *Computerworld*'s senior editor, social and legal issues. His Internet address is mbetts@cw.com.



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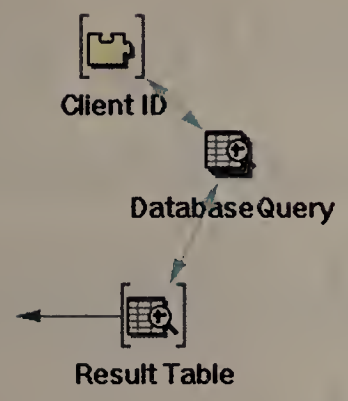


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Large Systems

HARDWARE • SOFTWARE • CORPORATE STRATEGIES

AS/400 field grows greener

By Craig Stedman

Client/server technology and the AS/400 are starting to get to know each other.

Lawson Software, a key vendor of client/server applications for Unix systems, plans this fall to ship a release of its software with identical capabilities for IBM's AS/400 machines. AS/400 users who were briefed by Lawson late last month said they expect to be able to buy the software in September (see chart at right).

Other Unix-oriented client/server vendors such as PeopleSoft, Inc. and SAP AG also expect to ship AS/400 versions of their products in the next 12 months. Meanwhile, several AS/400 software companies have released client/server packages or plan to do so in the near future (see chart below).

The AS/400 is the most widely used midrange system, with an installed base of more than 300,000 boxes. But virtually all of those machines are used in traditional green-screen or terminal emulation modes. Until IBM's shipment this year of Version 3 Release 1 (V3R1) of the OS/400 operating system, the AS/400 was mostly terra incognito for client/server applications.

Limited use

Lawson is a prime example. The Minneapolis-based company got its start in the IBM midrange market and has about 1,800 terminal-oriented AS/400 customers. Lawson's newer Universe software has run on the AS/400 all along, but until now, it was limited to host-centric uses, said Mark Galloway, director of product marketing at Lawson.

Doing client/server on the AS/400 "was possible" before V3R1, but the new version "took away a lot of the barriers," said Thomas Bittman, an analyst at Gartner Group, Inc. in Stamford, Conn. Prior to V3R1, the AS/400 lacked strong Windows client capabilities, support for standard database interfaces and competitive implementations of TCP/IP and the SQL querying language, he said.

"IBM was slow in coming out with more of a client/server technology" for the AS/400, agreed Robert Preston, associate vice president for information systems at Examination Management Services, Inc. (EMSI) in Dallas. But V3R1 "is a very different operating system" that should be much more amenable to client/server products such as Lawson's Universe, Preston said.

EMSI, which gathers and processes health data on life insurance applicants, will install V3R1 this month, Preston said. Later in the year, the company plans to migrate from its existing Lawson applications to Universe Release 6.1 and Lawson's equally new Open Enterprise Desktop client software.

The new features Lawson provides "hopefully will empower our users to do more of their functions from the desktop," Preston said. Training new employees who have previous PC experience should also be easier, he added. "Learning the Lawson software is going to be much less of a jump," he said.

Users rave

Dean Foods Co. sent almost 40 end users and department managers to check out the new software at Lawson's user group conference in Minneapolis late last month. "We pounded on it in the labs, and our people came back very impressed," said Rod Liddle, corporate controller at the food and dairy processing company in Franklin Park, Ill.

"It's going to be a lot easier to navigate and get around to accomplish the tasks they want to accomplish," Liddle added.

With Universe 6.1 and Lawson's new client software, Dean's users should be able to move among applications without first having to close the application they are leaving, Liddle said.

Expanding Universe

Lawson Software's Universe server and Open Enterprise Desktop client software:

Features
- Dynamic Data Exchange support for sharing data with Windows applications
- Customizable tool and navigation bar with icons grouped in tabbed folders
- Support for defining workflow and business process rules
- Ability to attach Lawson screens to MAPI-compliant E-mail documents
- Visual Basic compiler with macro extensions for tailoring applications

Pricing
- $31,000 per application module for 10 concurrent users

Availability
- Unix systems – immediate
- AS/400 systems – fall

Join the crowd

Other vendors developing client/server business applications for the AS/400 include the following:

Unix vendors	Shipment date
PeopleSoft	Not specified
SAP AG	Mid-1996
AS/400 vendors	
J. D. Edwards	Financials – November 1995 Manufacturing/distribution – early 1996
System Software Associates	June 1995
Software 2000	Human resources – February 1995 Financials – late 1995
Marcam	First quarter 1996

Image system cures hospital records ills

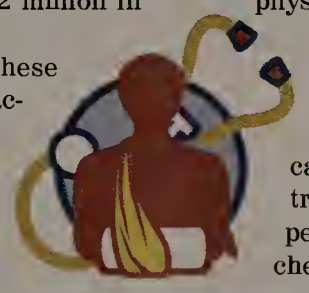
By Julia King

In the past year, St. Vincent's Hospital in Birmingham, Ala., has become a model of health care efficiency.

Among other things, the 338-bed acute care facility has done the following:

- Cut patient registration time from 10 to 2.6 minutes.
- Slashed insurance verification time by 66%.
- Eliminated 20% of its business office staff, even though patient registrations have increased 40%.
- Stored all patients' records and insurance information on-line.
- Reduced the average accounts receivable time from 35-plus days to 28 days, saving $2.2 million in the process.

Behind every one of these accomplishments, according to hospital officials, are two image-based client/server systems that together will knock off about $3 million from administrative costs in the next two years.



In the bank

Image-based client/server systems have helped reduce St. Vincent Hospital's average accounts receivable time to 28 days, compared with a health care industry average of 66 days. Each day in the accounts receivable cycle translates to $725,000 in costs.

Quick payback

So far, St. Vincent's has invested about $3.5 million in the image-based systems, according to Curtis James, an executive vice president and St. Vincent's chief financial officer. Now that they have both been up and running for a full year, the hospital is calculating its payback period, which James estimated will range from 2 to 2½ years.

Developed using FileNet Corp.'s Image Management System and WorkFlo language, the new systems also use American Management Systems, Inc.'s (AMS) Patient Link and Patient Record software to convert paper-based records into electronic images. These, in turn, can be merged with data from a mainframe-based hospital information system and other departmental laboratory and pharmacy systems to form a comprehensive electronic patient record.

On the client side, the hospital has so far installed about 140 Windows-based PCs, giving staffers in all departments instant access to all patient, medical, insurance and financial information. The system's servers, which house the applications and patient data in an Oracle Corp. database, are IBM RISC/6000 computers.

Additionally, working with AMS in Fairfax, Va., the hospital has built several rules-based workflow modules that streamline and automate hospital business processes, ranging from gathering pre-admission data to completing and archiving patient medical charts.

Under one of these modules, physicians can complete and sign off on patient charts on-line. Under another module, the hospital pharmacy can electronically retrieve patient charts to perform monthly quality checks, which can also be completed on-line.

"Before, the pharmacy would have to request that medical records make copies of the 200 or so [paper-based] charts they needed. Someone would have to take them there, get a sign-off on them and then shred them when they were returned to medical records," recalled Jose Valencia, assistant vice president of business services.

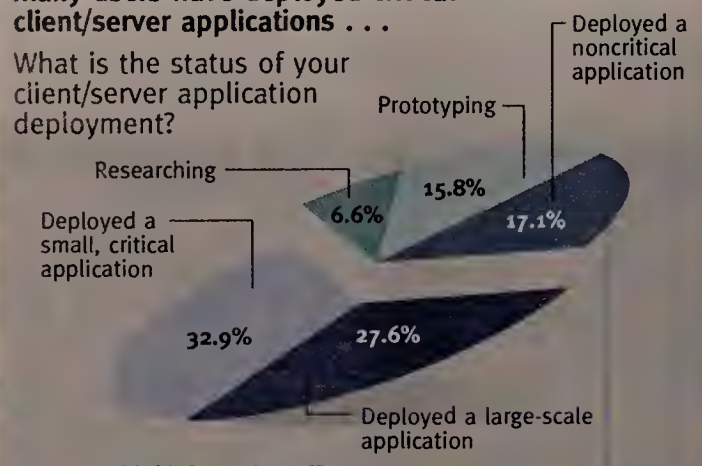
On the administrative side, a module in the Patient Link system electronically gathers insurance and medical information necessary for admission days — and sometimes weeks — before a patient actually arrives at the hospital. This has worked to cut registration time as well as boost customer service, especially with expectant mothers, James said.

About 25% of patients admitted to St. Vincent's are there to deliver a baby, he noted. "With the new system, we've worked out a system so those patients don't need to come to admissions anymore because they're pre-admitted."

Still waiting

Many users have deployed critical client/server applications . . .

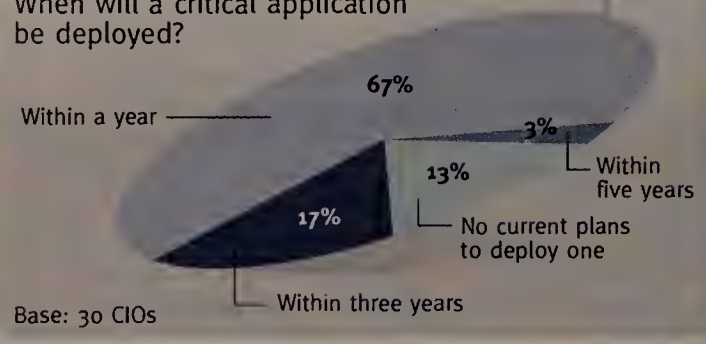
What is the status of your client/server application deployment?



Base: 76 chief information officers

. . .yet many others have not

When will a critical application be deployed?



Base: 30 CIOs

Source: International Data Corp., Framingham, Mass.

Briefs

Eatery outsources

CKE Restaurants, Inc. in Orange County, Calif., last week outsourced a healthy portion of its information systems operations to **SHL Systemhouse, Inc.** Terms of the five-year contract, estimated to be worth between $10 million and $15 million, call for SHL to manage and support the restaurant chain's AS/400 systems, help desk, data and voice networks, and LAN server operations.

IBM to revamp product data line

As it did with its Workgroup product line, **IBM** plans to completely revamp its product data management (PDM) software, ProductManager, though the company is mum about specifics. The software, which brings together planning, designing, engineering and production efforts in one collaborative area, will be unveiled at the EDMA/PDM Vision 95 show in Chicago, Sept. 25-28.

Mainframes score remotely

IDEA Associates, Inc. in Billerica, Mass., next week plans to add TCP/IP, remote management and dial-in support to its low-end Concert communications controllers for IBM's AS/400s and mainframes. The features will ship this month as separate software modules, the company said. Midrange customers using Concert will be able to connect to TCP/IP networks without supporting that protocol on their AS/400s, according to IDEA. Remote dial-in is also being added to the AS/400 version of Concert, while the AS/400 and mainframe products will now support remote management from a Windows PC at a central site.

Informix ports database to Unisys

Informix Software, Inc. has joined **Oracle Corp.** and **Red Brick Systems** in porting its database software to **Unisys Corp.**'s massively parallel processing computer system. The Informix relational database management system is expected to be available on the Unisys hardware next year.

Comdisco targets health care

Comdisco, Inc. in Rosemont, Ill., acquired the assets of **National Equipment Sales & Leasing, Inc.** and is using them to form a new division targeted at the pharmaceutical, chemical and health care industries. The Comdisco Laboratory and Scientific Group will sell and lease used equipment and market asset management and other services in those vertical markets. The unit is at National Equipment's former facility in Canton, Mass.

New Products

Kingston Technology Corp. has introduced the Data Silo DS500, a rack-mountable, external expansion chassis.

According to the Fountain Valley, Calif., company, the Data Silo DS500 is RAID-compatible and can house up to nine half-height SCSI peripherals or four full-height and one half-height devices. It can support one to four hosts.

The Data Silo DS500 is available with a 50-pin SCSI-2 or fast wide 68-pin SCSI-3 I/O interface. It has monitors for temperature, power supply and fans and includes warning lights and alarms.

Pricing for the Data Silo DS500 starts at $1,200.

▶ *Kingston Technology*
(714) 435-2600

Altai, Inc. has announced Zack Enterprise Automation 3.2 for MVS.

According to the Arlington, Texas, company, Zack 3.2 is an integrated enterprise automation system designed for distributed processing environments. It features multiple subsystem support that allows multiple copies of the product to execute on a single IBM MVS system sharing one database or separate databases. Companies can purchase a single license per MVS system to distribute automation functions.

Zack Enterprise Automation 3.2 for MVS enables communication with other Altai applications running on different systems or platforms. That function lets users receive message traffic relating to remote mainframe systems from a host system.

Pricing for Zack Enterprise Automation 3.2 for MVS starts at $45,500.

▶ *Altai*
(817) 649-1816

Emphasys Software, Inc. has introduced EmphaSys/36, a product for IBM System/36 environments.

According to the Eden Prairie, Minn., company, EmphaSys/36 supports System/36 migration to Unix environments, and it supports System/36 applications in Unix environments. Users don't have to abandon their existing software applications, and cabling doesn't have to be replaced. Current twin-axial devices can also be used.

EmphaSys/36 is available in small, medium and large versions. The small and medium versions use The Santa Cruz Operation's SCO Unix operating environment on an Intel Corp.-based PC, while the large version supports migrated System/36 applications on a Digital Equipment Corp. AlphaServer 400.

Prices for EmphaSys/36 small system start at $12,000.

▶ *Emphasys*
(612) 941-9337

Information Builders, Inc. has introduced Distributed SmartMode for EDA/SQL, a query analyzer.

According to the New York firm, Distributed SmartMode for EDA/SQL is an intelligent analyzer/governor designed to control distributed queries sent to Information Builders' EDA distributed servers through the EDA Hub Server 3.1. It can prevent runaway distributed queries before any system or network resources are used.

Distributed SmartMode for EDA/SQL provides on-line control to prevent unauthorized or poorly written requests that consume corporate database resources. It acquires knowledge about site-specific data access and cost patterns by monitoring actual traffic or simulating typical requests. The analyzer uses this experience to construct rules that can predict the costs of future requests.

It is compatible with ad hoc query tools and client/server gateway tools that access EDA servers, including products from Lotus Development Corp., Powersoft Corp., Oracle Corp., Informix Corp. and Microsoft Corp.

Pricing for Distributed SmartMode for EDA/SQL starts at $24,500.

▶ *Information Builders*
(212) 736-4433

Prolific, Inc. has announced Snapshot/400 4.0, a new version of its graphical IBM AS/400 performance monitoring tool.

According to the Arlington, Texas, company, Snapshot/400 captures AS/400 performance data and graphically represents performance activity and trends. Snapshot/400 monitors remote communication lines, current and average CPU usage, Top 5 jobs, response times, faulting rates, disk space, current transactions and memory utilization.

Snapshot/400 provides alert facility; it can be configured to send an alert when a batch program is interrupted, requiring a message response before it continues. Alerts can be tracked for auditing purposes.

License fees for Snapshot/400 start at $2,750.

▶ *Prolific*
(817) 649-3223

Large Storage Configurations, Inc. has introduced the Integrated Data Server (IDS), a product based on Sun Microsystems, Inc.'s SPARC technology and Solaris 2.0 software.

According to the St. Paul, Minn., company, the IDS is a high-performance, plug-and-play network storage server that provides file management, storage and archival and retrieval services. It can be installed on a Network File System network and can manage the storage of heterogeneous systems, including systems from Sun, IBM, Hewlett-Packard Co., Digital Equipment Corp. and Silicon Graphics, Inc., on the network.

The IDS was designed to manage storage capacities from several gigabytes to hundreds of terabytes.

Pricing for the IDS starts at $75,000.

▶ *Large Storage Configurations*
(612) 482-4535

4th Dimension Software, Inc. has unveiled Control-O 2.2.0, automated systems operations software.

According to the Irvine, Calif., company, Control-O 2.2.0 features a rules-based design that eliminates the need for programming in developing automated functions. It includes prewritten applications that can be used as automation procedures or as the basis for designing automation facilities.

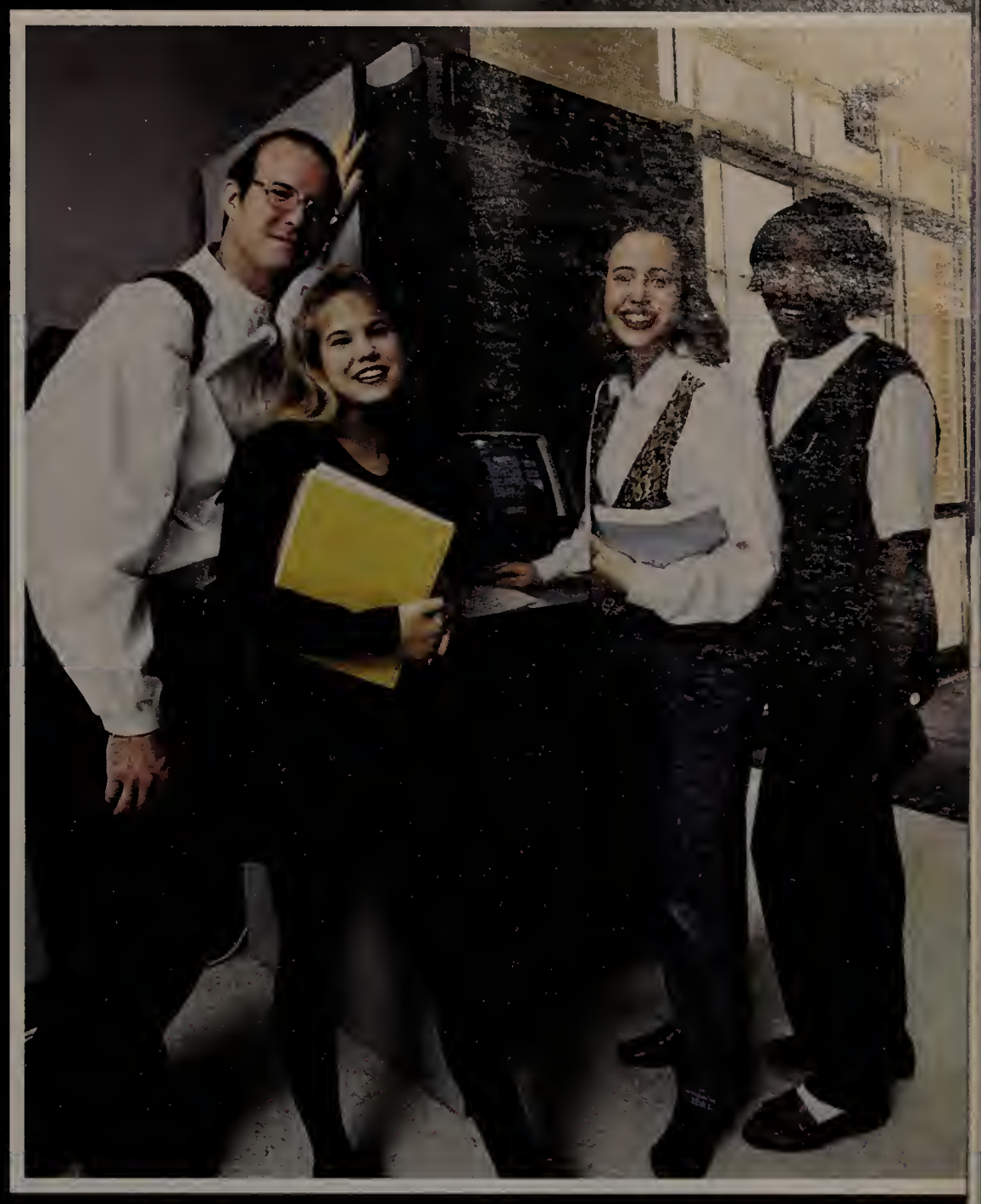
Control-O 2.2.0 includes automated server architecture to provide scalability of automation. It also features a preset environment that defines and reuses log-on, log-off and started task operations.

Pricing for Control-O 2.2.0 starts at $30,000.

▶ *4th Dimension Software*
(714) 757-4300

"OUR 35,000 STUDENTS DON'T KNOW WHAT EDA/SQL® MIDDLEWARE IS...

THEY JUST KNOW THEY DON'T HAVE TO WAIT IN LINE TO GET THEIR GRADES."





Ricardo Bartra
Manager, End-User Computing
Alamo Community College District
San Antonio, TX

At the three colleges that make up Alamo Community College District, there are no more long lines at the registrar's office. When students want information on their grades, tuition bills, or even their financial aid status, they simply walk up to one of the conveniently located kiosks, enter their Social Security # and password, and breeze through a colorful touch screen menu. They can even print out the information on the kiosk printer.

Do the students know they're using a PC and Information Builders' EDA/SQL middleware to transparently access and join files from the college mainframe?... No. Do they know their mainframe database queries are being processed and displayed in real time on the kiosk PC using Information Builders' FOCUS/EIS for Windows?... No. Do they know the college has saved millions of dollars by protecting its investment in legacy systems rather than re-engineering its entire information architecture?... We doubt it. Do they appreciate access to their student records 24 hours a day without standing in long lines?... You better believe it!

EDA/SQL middleware from Information Builders. The process is transparent. The benefits are obvious.

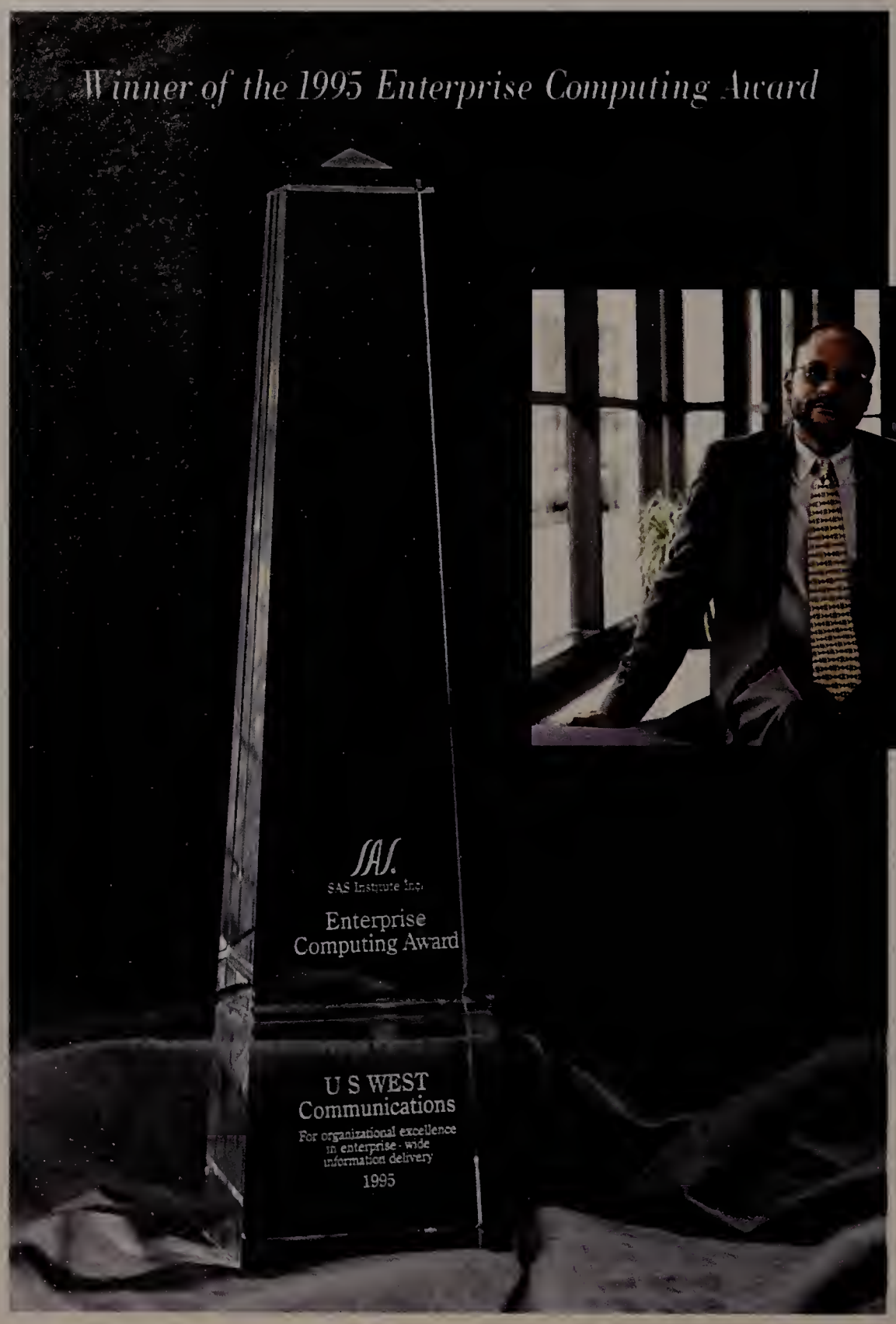
For more information and a free video showing how different companies have benefited from EDA/SQL middleware technology, contact your local Information Builders sales office, or call **1-800-969-INFO.**
In Canada Call 416-364-2760

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Transparent Enterprise Data Access

Information Builders

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U S WEST Communications Makes the Right Connections



Calling on the SAS® System for Critical Decision Making, the Telecommunications Leader Responds to Customers in More Ways than Ever

To meet the needs of 25 million customers spanning 14 states, U S WEST Communications is doing more than talk about customer service. It's *listening*—and transforming business processes to monitor every facet of customer interaction. Part of this transformation involves collecting, analyzing, and reporting on massive amounts of data—everything from daily call volume to disruptions in nearly 45 million miles of copper/fiber communication lines.

"Until recently, various organizations and systems within U S WEST Communications were responsible for portions of the data collection, reporting, and analysis tasks necessary to assess the performance of our business," says Ronald Telson, Director of Mass Markets and Operations-Processes. "We are now implementing a program to provide an integrated and unified approach to management-by-facts."

The Data to Meet the Demand

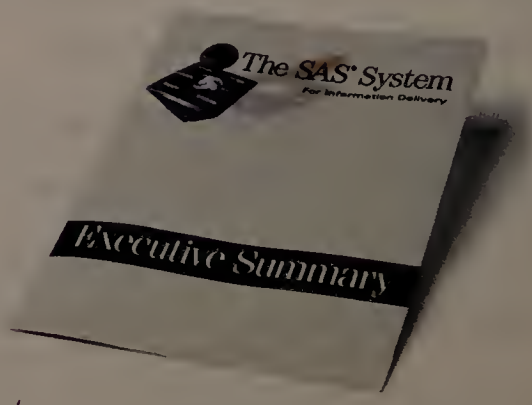
When it came to choosing the software to meet that business challenge, U S WEST Communications called on the SAS System of software. More than 28,000 companies throughout the world rely on the SAS System for its analytical breadth as well as its capabilities for data warehousing, for client/server applications development, and for graphical user interface—all of which U S WEST Communications found useful.

As a result, U S WEST Communications expects to achieve a key business goal—to monitor the quality of its processes and the health of its network.

That's why we've chosen them as the 1995 recipient of our Enterprise Computing Award—given annually to the organization that best exhibits excellence in leveraging SAS Institute technology to meet critical business goals.

To learn more about the SAS System, call or send for our free Executive Summary. Or to learn how your organization might qualify for the 1996 Enterprise Computing Award, ask for our free criteria.

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Application Development

CASE • LANGUAGES • TOOLS

Rival integration methods fight for developers

Expersoft and Teknekron tools follow own paths

By Elizabeth Heichler

There's more than one way to integrate applications. This week, developers who want new ways for distributed applications to share information can pit two technology approaches.

In one corner are object request brokers (ORB). ORBs sit on client and server systems and manage interactions among the objects on a distributed network, arbitrating objects' requests for information and services from one another.

And in the other corner is publish-and-subscribe technology. This approach uses a software bus that broadcasts data over a network. Data is picked up only by applications that have been set up to subscribe to it; and traffic goes over the network only when the subscribing application is up and running. Some users say this is a less complex approach to interprocess communications.

Heavy name

Isis Distributed Systems takes its name from the Egyptian goddess who was venerated for resurrecting her husband, Osiris, after he was dismembered at the hands of his brother Seth. Isis made whole Osiris' brutally broken body and gave him eternal life.

CORBA conforming

Wearing the ORB trunks is Expersoft Corp.'s PowerBroker 4.0, a major upgrade to its ORB, formerly called Xshell. With PowerBroker 4.0, Expersoft is one of the first ORB vendors to launch a product that conforms to the latest version of Common Object Request Broker Architecture (CORBA) Release 2.0. But because no one object model has established itself as a standard, PowerBroker has been designed as a "meta" ORB that hides the differences among object models. This frees developers from worrying about the underlying object architecture, according to the company.

PowerBroker 4.0 also adds support for Smalltalk interoperability. This is of great interest to Andersen Consulting's Eagle Technology team, said solutions architect Kent Steffen. Object orientation and Smalltalk are key elements of the Eagle Technology project, which is defining a new basis for software development at the Chicago-based consultancy. Steffen also praised the flexible architecture, which he said will make it easier to modify systems down the road.

ORBs are increasingly the middleware of choice for corporations that are moving to object-oriented programming and want to build a software infrastructure following the same philosophy. Most comply with the Object Management Group's (OMG) CORBA specification. Users say CORBA compliance is important because it allows them the flexibility to change vendors and use any product that implements the standard.

Its rival: Teknekron Software Systems, Inc., which recently launched its Rendezvous Software Bus. The product is a stripped-down, shrink-wrapped version of the message transport mechanism technology on which the company has based its offerings of middleware for the financial industry.

Teknekron's approach is not incompatible with ORBs. In fact, the company is working with the OMG to extend CORBA to support such an event-driven communications model, said Bradley Rode, vice president of core technology at the Palo Alto, Calif.-based Teknekron.

At cellular services provider Airtouch Communications, Inc. in Walnut Creek, Calif., consultant Jeffrey Cavallaro said he found Rendezvous provides a "nice, economical way of processing events. It's much simpler than an object request broker scenario."

In other news, Iona Technologies Ltd. and Isis Distributed Systems, Inc. have successfully integrated Iona's ORB with Isis' fault-tolerant software technology. The Orbix+Isis product will begin shipping next week.

New object request brokers and messaging middleware

Product/Vendor	Features	Price
PowerBroker 4.0/ Expersoft San Diego	Supports CORBA 2.0, OLE 2.0; interoperates with Smalltalk, C++ and Visual Basic	$5,000 Smalltalk or C++ developer's kit; deployment version starts at $175 (per client), $575 (per server)
Rendezvous Software Bus/ Teknekron Software Systems Palo Alto, Calif.	Messaging-oriented middleware using publish-and-subscribe mechanism; will have interfaces to Visual Basic and PowerBuilder and adapters for Notes and leading PC desktop applications	$350 to $3,000, depending on platform
Orbix+Isis/ Isis Distributed Systems Marlboro, Mass. **Iona Technologies** Dublin	Fault-tolerant version of Iona's Orbix object request broker using Isis technology for active replication	$12,000

Revelation/Lotus licensing deal may boost low-profile Notes product

By Suruchi Mohan

Revelation Technologies, Inc. recently announced that it has acquired an exclusive license from Lotus Development Corp. to develop and market Lotus Notes VIP. The agreement could boost VIP's image in the market.

VIP — or Visual Programming — is a Windows-based application development environment for creating Notes applications. It is a superset of LotusScript, a scripting language that will be embedded in the forthcoming Notes 4.0. Under terms of the agreement, Lotus will continue to use VIP unrestrictedly.

Some industry watchers see the move as Lotus' attempt to streamline its product line and focus on developing new versions of Notes and bringing them to market.

"Right now, they are very focused on the platform and getting Notes to be ubiquitous," said Judith Hurwitz, president of Hurwitz Consulting Group, Inc. in Newton, Mass. "They have to do a lot to take the emphasis off the operating system and put it on Notes. They [probably] felt they couldn't focus on both."

groupware

Stuck in a corner

"VIP is a nice tool, and Lotus never marketed it the way it should have," said Judith Hurwitz, president of Hurwitz Consulting Group. "It never got the type of attention it needed to [be successful]."

Hurwitz called Lotus' decision disappointing. "You can't have a good platform without a tool," she said.

For Revelation, perhaps the biggest gain is Lotus' staff, said Audrey Augun, vice president of marketing at Percussion Software, Inc., a Lotus business partner in Stoneham, Mass. Under the agreement, a team of core VIP developers will join Revelation. This, Augun said, is a big plus given the current high demand for Notes developers.

Revelation's acquisition of VIP raises the question of what will happen to its competing application development product, OpenInsight.

James Acquaviva, president of Revelation, said the Stamford, Conn., company will continue to develop both products for now. Subsequently, his development team will try to include the best features of both products to offer a suite of tools, he said. This suite would, for example, take advantage of OpenInsight's strength in creating workgroup applications and VIP's rich-text support. Acquaviva declined to give a time frame for this suite.

Concurrent with this agreement, Revelation announced that it has started to ship the new version of VIP, which Lotus built. Version 1.1 includes features such as rich-text support, improved query performance and productivity tools and applications.

More tools

In other news, Lotus announced Notes Reporter for Windows 1.1, a report writing and analysis tool. Reporter creates reports on data contained in Notes databases.

"Notes Reporter looks like a good, solid product," said Greg Walrath, Notes programmer at Westin Hotels and Resorts in Seattle. It performs essentially the same functions as Approach, Lotus' desktop database — spreadsheets, reports and charts — without the overhead, he said. Notes Reporter also offers simpler functions.

The product, which will ship in the third quarter, costs $59 per unit for 100 units or more.

Viewer freebies unveil imaging for users

By Tim Ouellette

Computer users could soon find themselves with more image viewers on their desktops than files.

Vendors are scrambling to offer free image viewer software as part of their software offerings — or, in the case of Microsoft Corp.'s Windows 95, as part of the operating system.

There are two kinds of viewers being provided: image viewers that let users see many types of file formats and those that let users call up only one kind of format.

On the multiple-format front, Lotus Development Corp. is providing a free image viewer for Notes called the Lotus Image Viewer. And Wang Laboratories, Inc. is developing an image viewer for future versions of Windows 95 and Windows NT as part of its lawsuit settlement with Microsoft.

In the other camp are the single-format image viewers, which are usually found in electronic distribution software packages such as Adobe Systems, Inc.'s Acrobat, Novell, Inc.'s Envoy and Common Ground, Inc.'s Common Ground 2. In these packages, documents are turned into one format for movement across the network or onto the Internet.

The free viewers from Wang and Lotus will provide a small amount of functionality (see chart) but will act more as a preview of what users can do with imaging on the desktop. For example, to smoothly integrate the viewer into a business application, users will have to buy component imaging software, which is offered by Wang and Diamond Head Software, Inc., among others [CW, July 10].

"I think the importance of the free viewer is it encourages images as a standard desktop data type," said Bruce Silver, principal at Bruce Silver Associates in Weston, Mass. And when someone attaches an image to an electronic-mail message, for example, there wouldn't be a question of whether or not the reader can view the image, he added.

With the Wang/Microsoft agreement and IBM's purchase of Lotus, smaller developers of commercial image viewer software are caught waiting for the impact of the new free viewers on their sales. Computer Clearing House, Inc.'s Imaging Group, for example, has a Notes imaging tool kit called FileCabinet that also includes a viewer.

To differentiate the product from the free Lotus viewer, Computer Clearing House lets users batch-scan paper files into images, then view up to 36 file formats. Users can also create a number of zoom views of an image, so they don't have to search the entire paper at a later date for certain information, according to Rodney Labby, marketing manager at the Rochester, N.Y., firm.

Some analysts think that even with the influx of free viewers, there will still be room in the growing imaging market for small niche players to make money.

"There is still an opportunity for companies to offer the next level of functionality and charge for it," said Jennifer Mitchell, principal analyst at Dataquest, Inc. in San Jose, Calif.

A room with a view

Free viewers provide limited functionality but open the way to more desktop-based imaging

Company	Viewer	Features
Lotus	Lotus Image Viewer (for Notes)	Displays image files, faxes and OLE documents created in Notes. Zooms, rotates, prints, faxes and performs optical character recognition on images.
Wang	ImageVue (for Windows 95, Windows NT)	Scans paper documents and incoming faxes. Displays and annotates files and faxes. Adds images to Windows applications via OLE.

New Products

Pure Software, Inc. has introduced PureVision, a product that lets developers use the Internet to measure the external user testing of software programs.

According to the Sunnyvale, Calif., company, PureVision monitors the function and use of software beta versions running at user sites. It collects this information and relays it back to the software supplier over the Internet.

PureVision tracks usage and crash-related information and provides statistics on features used, hours tested, runs per test site and number of unique crashes.

PureVision includes embedded object code insertion technology to take measurements and collect application data while the application is running. This information is sent back to the developer via the Internet.

Pricing is based on the number of testing sites per concurrent test projects. The standard price for one project with 11 or more remote testing sites is $75,000.

▶ *Pure Software*
(408) 720-9200

Progress Software Corp.'s Crescent Division has announced EnQuiry 1.0, a client/server development tool.

According to the Bedford, Mass., company, EnQuiry 1.0 lets Visual Basic programmers visually build forms and queries without coding.

Users can graphically manage the SQL query, control the layout process and see the result of their queries. They can also see the way data is presented to users in either free-form or grid representations.

EnQuiry 1.0 supports Visual Basic 3.0 and costs $395.

▶ *Progress Software*
(617) 280-4000

Voxware, Inc. has unveiled ToolVox, a suite of software development tools.

According to the Skillman, N.J., company, ToolVox lets developers increase and enhance the use of voice in multimedia applications.

It incorporates technology that enables voice compression ratios of 35-to-1 without compromising the character and quality of the original voice. Developers can also use ToolVox to create applications that let end users manipulate voice files during playback.

The suite of tools comprises ToolVox Compressor, for voice compression; ToolVox Warp-It, for speech time shifting; ToolVox Morph-It, for voice transformation; and ToolVox PerfectPitch, for pitch shifting.

Pricing for the complete ToolVox suite starts at $895, which includes 5,000 commercial runtime licenses.

▶ *Voxware*
(609) 497-1212

Secant Technologies, Inc. has released ObjectPM Control Pack, a control package for IBM's OS/2.

According to the Beachwood, Ohio, company, ObjectPM Control Pack offers a dozen control types that extend the set of controls supplied by OS/2 Presentation Manager. These controls include multicolumn list boxes, edit masks, a cell and combo box, split bars and gauges.

All controls in ObjectPM Control Pack conform to the PMCX architecture that allows the components to be used by most OS/2 programming tools. The Control Pack supports C++ programming environments by adding a set of class libraries that integrate the controls natively into IBM's OpenClass, Borland International, Inc.'s ObjectWindows and Secant's ObjectPM framework environments.

Pricing for ObjectPM Control Pack starts at $99.

▶ *Secant Technologies*
(216) 595-3830

Object Technology, Inc. has introduced Envy/Developer 1.45 for Digitalk, Inc.'s Visual Smalltalk 3.0.1.

According to the Phoenix company, Envy/Developer 1.45 is a component management system for workgroups that allows the sharing of objects throughout an enterprise by providing a common repository for the management of a workgroup's objects. The product supports Digitalk's application packaging technologies: Parts Workbench and Smalltalk Link Libraries.

Envy/Developer 1.45 is available on Microsoft Corp.'s Windows and Windows NT and IBM's OS/2 clients. It is also available on Novell, Inc., Banyan Systems, Inc., Microsoft's Windows NT, Sun Microsystems, Inc.'s SunOS and Solaris, Hewlett-Packard Co.'s HP 9000 and Sequent Computer Systems, Inc. servers.

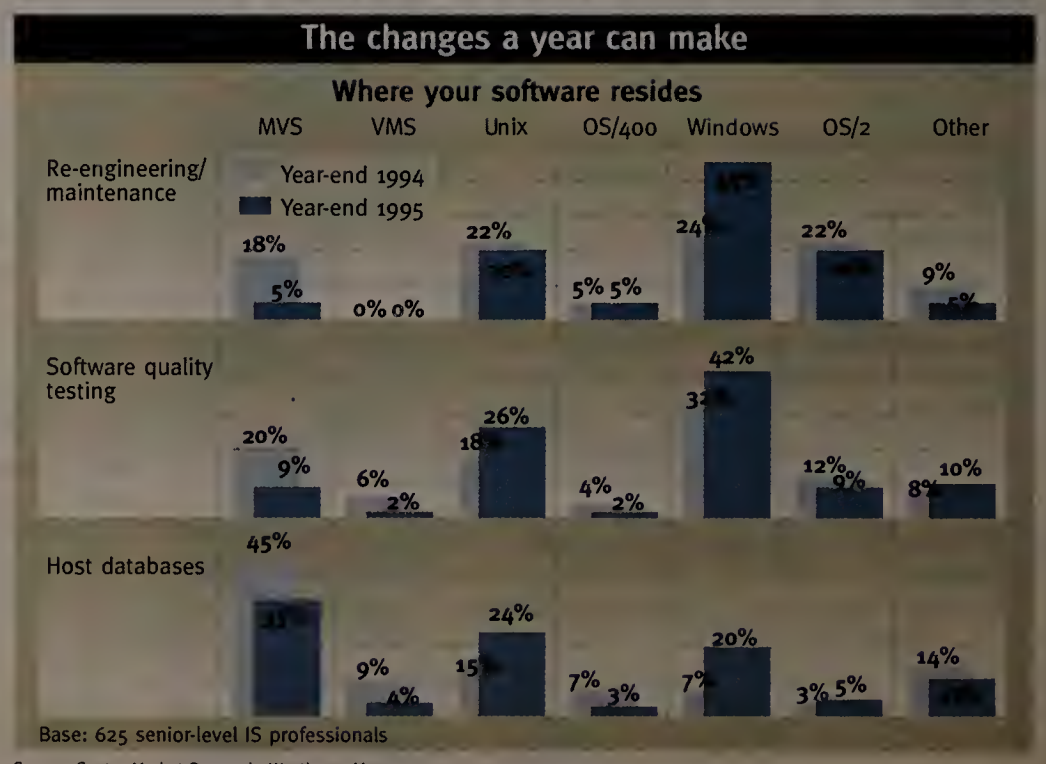
Prices for Envy/Developer 1.45 start at $3,000 per client or server for new users.

▶ *Object Technology*
(602) 222-9519

Product short

Imagine Software, Inc.'s Imagine, a custom control for Visual Basic, now supports Mitek Systems, Inc.'s QuickStrokes ICR imaging engine. Users can now use Imagine to access high-end handwriting recognition with minimal coding. Cost: $2,300. Imagine Software, Silver Spring, Md. (301) 588-8411.

The changes a year can make



Base: 625 senior-level IS professionals

Source: Sentry Market Research, Westboro, Mass.

OBJECT WORLD

Objects In Action 1995

And the winner is... everyone who comes to Object World!

Do you know who's developed the world's best end-user applications using OT? Find out during Computerworld's Object Application Awards Ceremony at Object World San Francisco.

This must-be-there event will be hosted by industry luminaries Steve Jobs of NeXT Computer and Gary Beach of *Computerworld*. And it takes place on Wednesday, August 16, at 6:00 p.m., followed by a reception sponsored by IBM.

This is your chance to see how OT's pacesetters are achieving extraordinary business results by putting object technology to work in real-world applications. And discover why so many companies are racing full speed ahead into object technology.

Of course, this is just one reason to head for Moscone Hall, August 15-17.

COMPUTERWORLD Object Application AWARDS

Don't miss the Distributed Applications Showcase.
Is OT the best way to build distributed applications? Object World exhibitors think so. And they're willing to share their latest tools, services and customer applications with you. Be there to see firsthand how leading companies approach the challenge of building distributed applications. And see the OMG CORBA 2.0 specifications in action for the first time. Learn from those who are putting OT to work right now!

Get a FREE Exhibits Pass.
Whether you sign up for the full Conference Program or take advantage of our offer for a FREE Exhibits Pass, you'll walk away a winner at Object World San Francisco.

Your FREE Exhibits Pass is your ticket to see hundreds of new products and services firsthand. Attend seminars put on by Object World exhibitors and the OMG. And hear keynote addresses by industry leaders like Colin Cook of Citibank and Dr. Gerald Held of Oracle.

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That's all in addition to the Live Distributed Applications Showcase and the Object Application Awards Ceremony! Plus the California Wine Tasting Reception!

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HOW TO REGISTER:

BY PHONE: Call us toll free at 1-800-225-4698 (in U.S.) or 1-508-879-6700.

BY WORLD WIDE WEB SERVER: Address: http://www.omg.org Select: Object World San Francisco.

BY E-MAIL: Send to: OMG@OMG.ORG. Type the word "help" by itself in the body of your letter, and the server will send you complete instructions. To receive a list of available files, type the word "index" on a separate line.

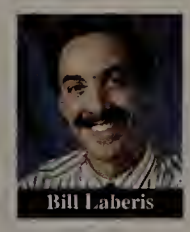
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Computerworld recommends Object World!

"Object World San Francisco has fast become the largest all-OT show in the nation, and it's truly your best forum for learning how to make the most of object technology. If OT is important to your organization or your career, Object World is the place to be.

"For the fourth year, we're proud to sponsor Computerworld's Object Application Awards Ceremony honoring the world's best uses of object technology. We hope to see you there to applaud the winners!"


Bill Laberis

HOURS AT A GLANCE

Exhibit Hall Hours:		
Tuesday	August 15	11:00 a.m.- 6:00 p.m.
Wednesday	August 16	11:00 a.m.- 6:00 p.m.
Thursday	August 17	10:00 a.m.- 2:00 p.m.
Wine Tasting Reception:		
Tuesday	August 15	5:00 p.m.- 6:00 p.m.
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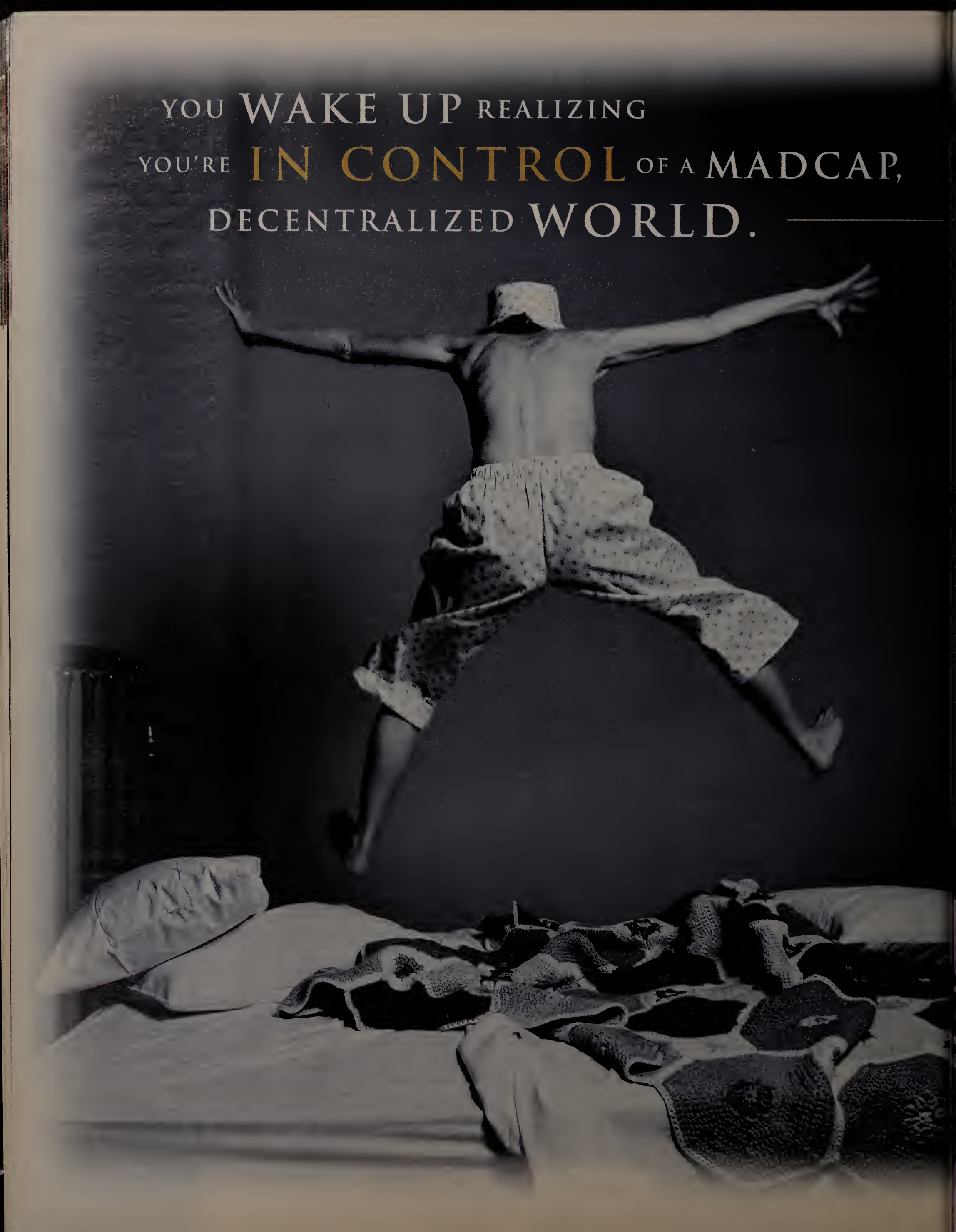
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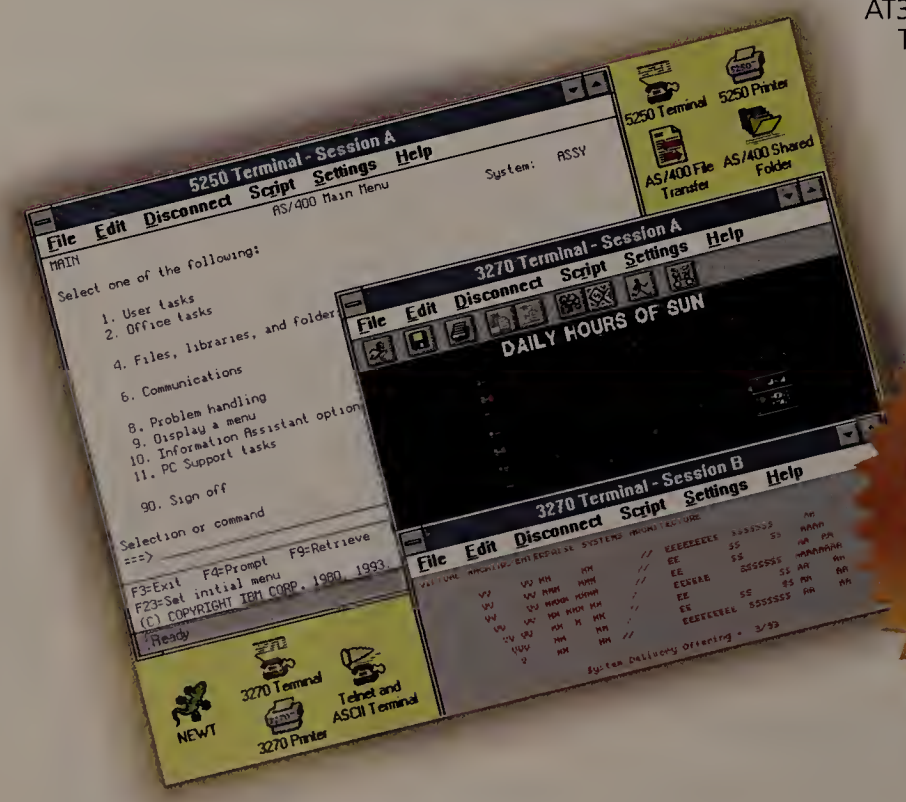
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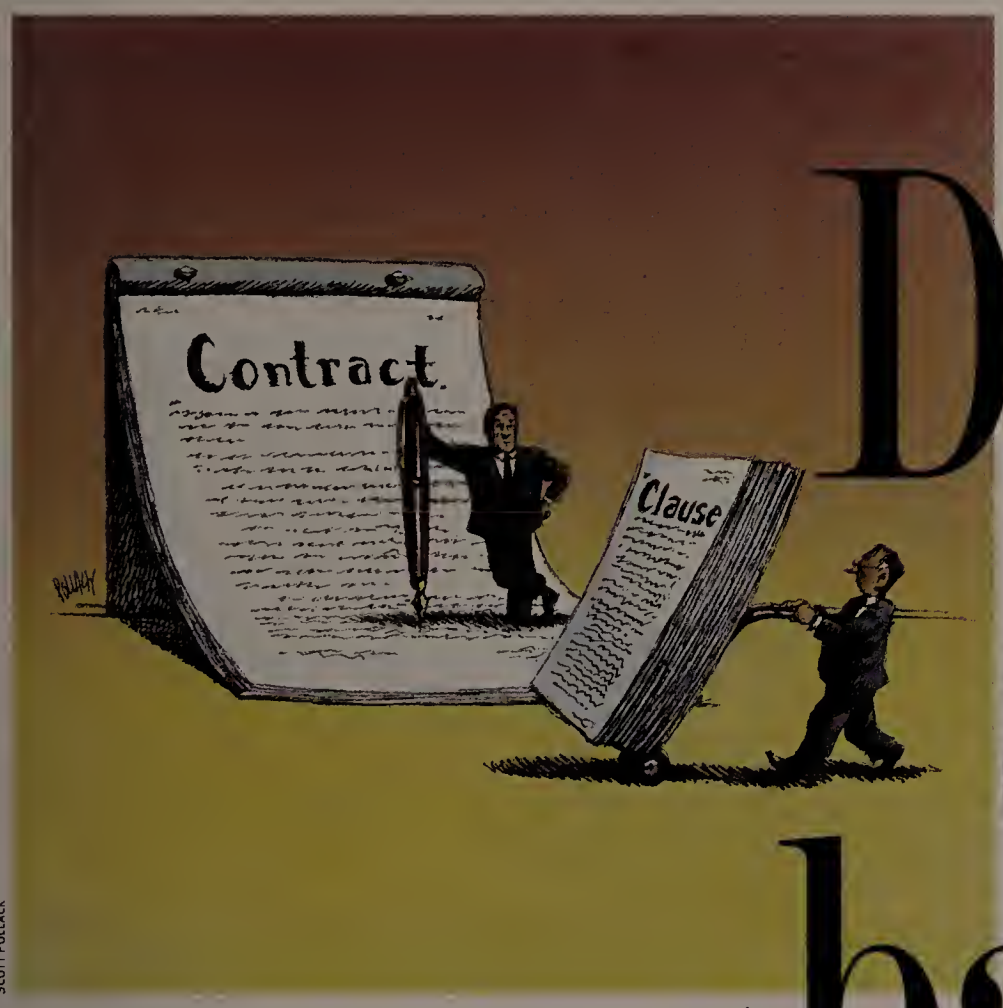
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Inside
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SCOTT POLLACK

By Melanie Menagh

Driving a hard bargain

Increased competition has outsourcing vendors scrambling to sign up clients for the long haul. The result is an opportunity for IS to get the upper hand in its contract terms.

AS ONE OF A SMALL but rapidly growing number of attorneys who handle outsourcing contract negotiations, John Halvey knows how important it is to keep your skills current.

In just the past 24 months, Halvey, a partner at Millbank, Tweed, Hadley & McCloy in New York, has seen a sea of change in the way outsourcing deals are structured. The current focus on core competencies, the outsourcing industry's maturation and more realistic expectations from client companies are forcing dramatic changes in the wording of outsourcing contracts.

And Halvey, who represents information systems managers, knows that understanding the legal changes in outsourcing deals means the difference between a happy relationship and an unqualified disaster. This is especially true when users are anxious to get the show on the road — a sentiment vendors encourage.

"Because of competition, vendors are in a bigger rush than ever to close," says Harry Glasspiegel, a partner at Shaw, Pittman, Potts and Trowbridge in New York. "They don't want clients shopping around, getting outside legal advice. They may sweeten up the deal in exchange for a sole-source discussion."

And what sweets are vendors offering? More favorable payment schedules for users, protection and retraining for displaced personnel, disaster recovery protection and a share in any new revenue or savings benefits.

There is much that is new in the outsourcing marketplace to make life a little easier for outsourcing client companies, Halvey says. There is more information, more viable vendors and better legal help. In turn, clients can be more choosy about what they're looking for — and looking to avoid.

"The user community is much more sophisticated. They've learned through experience where trigger events are that can cause trouble," Halvey says.

Lawyers therefore advise users to take time to assess current and future IS needs before entering any deal.



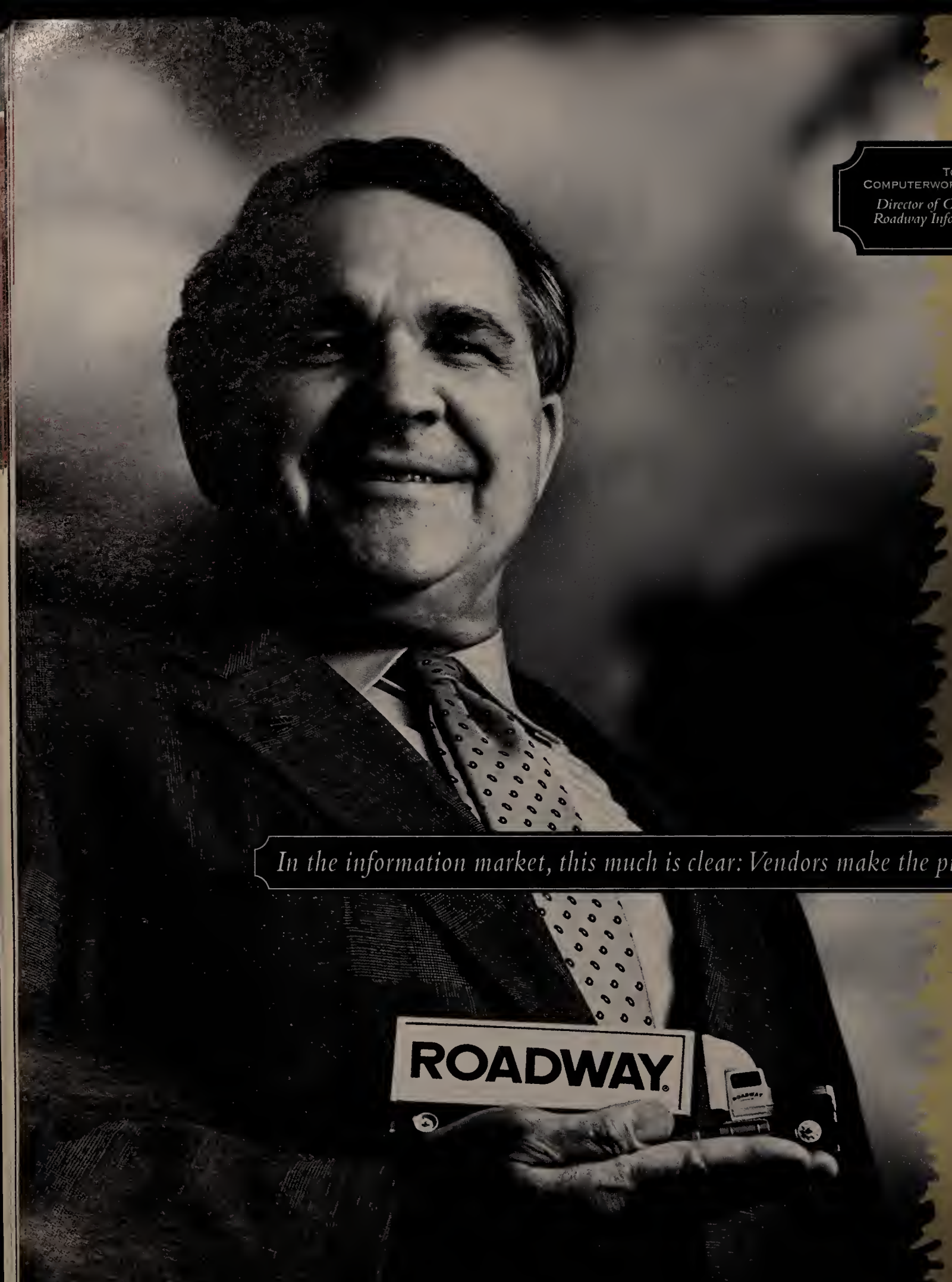
Protect your former people

Contracts now include plans for displaced personnel, including provisions for retraining, placement assistance and compensation.

Recent litigation has led to a greater focus on human relations issues, according to Glasspiegel. The most important issues deal with protecting employees who are displaced or transferred to the outsourcer.

User companies can include provisions regarding displaced key personnel, Glasspiegel says. "They make provisions that these personnel will be retained by the vendor company on their account, not switched to a different account and not terminated for a certain period of time."

Hard bargain, *page 73*



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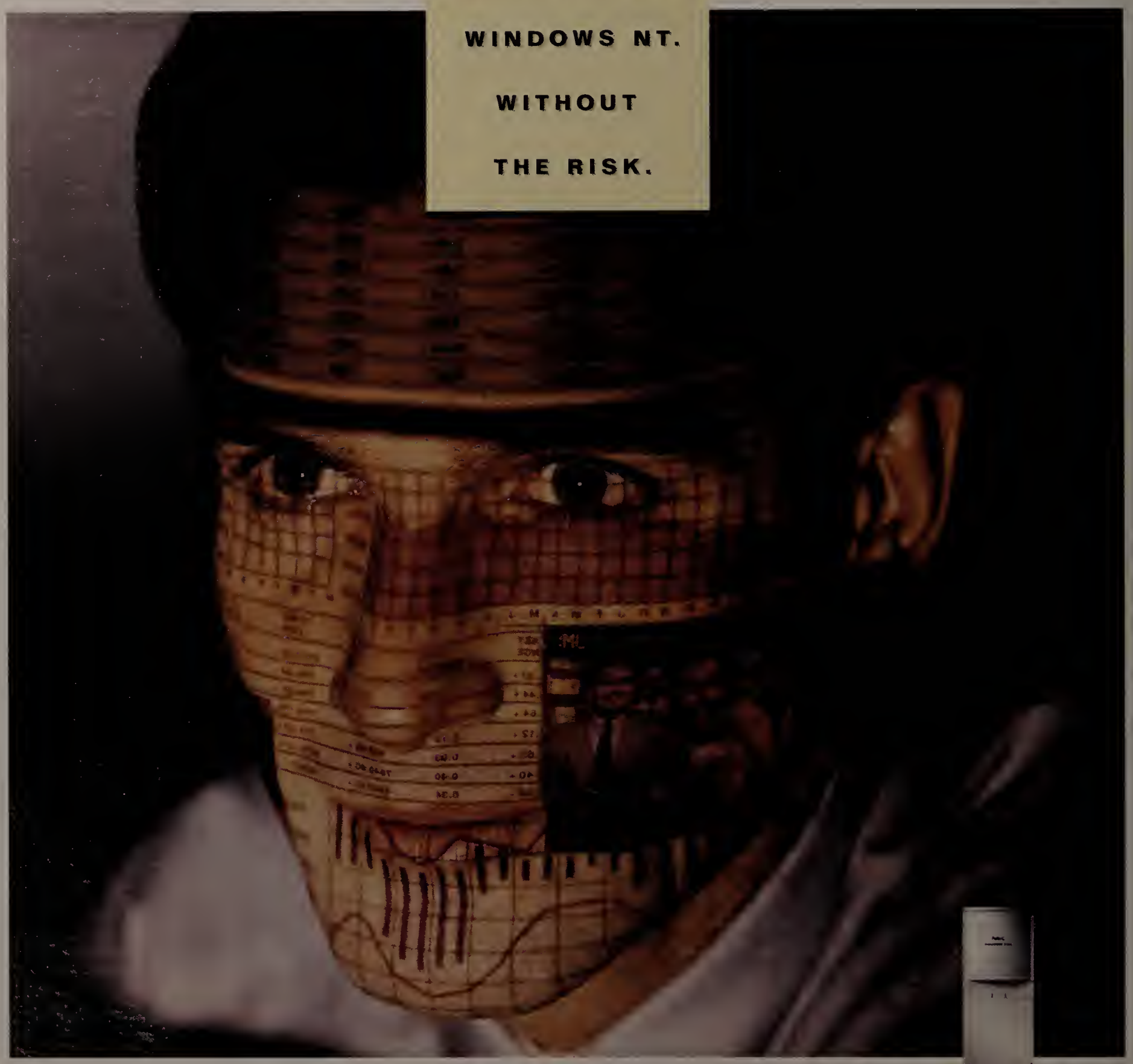
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Hard bargain

CONTINUED FROM PAGE 69

And of those who are not retained on the user's account, the user company can require that the vendor company retrain them for other assignments or provide them with placement assistance for their next job.

"If you are dealing with unions, you obviously are going to have to look at whatever special provisions that makes in the contract," Glasspiegel adds, "and be sure that those provisions are carried over in any outsourcing agreement."

A user company also has certain responsibilities regarding basic employee needs, Glasspiegel says.

"Legally, you are obligated to ensure that your original severance agreement with your employees is transferred to the vendor company," Glasspiegel says. This means making sure these former employees "have the same sort of arrangements for severance and benefits that they would have had if they were still directly in your employ."

Even before the contract goes into effect, "there are certain legal obligations to notify your personnel when you are planning to make a major change," Glasspiegel says.

"You are obligated when the process of outsourcing IS has proceeded far enough that you are making definite decisions to tell affected personnel in general terms what it is you are considering and how that will affect them. We advise all clients to be as honest and straightforward with personnel as possible. And it is our experience that companies want to deal in good faith with their staff," Glasspiegel says.



Be ready when disaster strikes

Outsourcers are being required to keep the user's business up and running, come hell or high water.

Recent national events have altered the face of "force majeure" provisions. These are so-called "act of God" clauses — what happens when forces beyond the control of either party come into play.

"They've been getting a lot more focus," Halvey says, "because there have been hurricanes, earthquakes, bombs."

The principal protection the client needs to cover those kinds of disasters are — quite simply — plans to keep your business up and running.

"Your goal is to build in specific provisions for disaster recovery," says Allen Grogan, a partner at Blanc, Williams, Johnston and Kronstadt in Los Angeles. "Make sure the vendor has in place a disaster recovery plan and facilities. The client needs to know that if a disaster hits one facility, your work can be transferred to another data center so that your business can keep going."

Whether the outsourcer provides the disaster recovery function or, in turn, subcontracts out that function, Grogan says, "The client should think through the problem and work out a solution. Then you should actually have a dry run to see that in case of a disaster, how that problem can be solved — sort of a fire drill — to see if the vendor can get you up and running and how long it takes."

And if the vendor is unable to provide disaster recovery protection? Grogan says the client can try to negotiate provisions that would allow it to collect for damages.

"Vendors will resist that," Grogan says. "In any case, your principal focus should be on having a plan to work, not worrying about damages. If there's a disaster of that magnitude and the recovery plan doesn't work, collecting damages should be the least of your problems. You could be out of business."



Get your fair share of the pie

Savings isn't the driving force behind most outsourcing deals, but users should benefit from any revenue or savings the vendor gets.

"More and more of these deals are driven by a strategic reason, the desire to deal with rapid change," Grogan says. "People understand that outsourcing isn't going to solve all their problems and save them 50% on [information technology] costs. Fewer deals are driven primarily by the desire to save money per se. Savings is no longer the driving force."

Instead, "value-added" has become the new mantra, where the user can share any revenue or savings generated by the vendor as a result of the outsourcing partnership.

This is a change Halvey sees as altogether appropriate: "These contracts used to be viewed as technology-based transactions. Really they are financial transactions that happen to involve technology."

There are several ways this is affecting deals. "The user may fund the R&D of new software that the vendor may later want to market," Grogan says. "The contract provides that the user pays for software development costs up front but shares in any revenues the vendor derives from licensing it to other customers."

Likewise, if the outsourcer can save the user money, say, by "reducing staff or consolidating facilities," they will expect to take a cut of those savings, Grogan says. "However, the user needs to have right of approval over reductions in staffing or facilities. These clauses stipulate that savings have to be achieved without noticeable reductions in service."

The contract should define some sort of baseline anticipated cost savings or efficiencies the outsourcing intends to achieve, Grogan says. "For example, say the vendor anticipates that it can reduce your staff by 20%. You may build in provisions that say they can do further staff reductions and still meet all performance obligations and benchmarks, instead of the vendor getting all the benefit those additional cost savings can be shared with the customer. You say to the vendor, 'We can do this, but I want to realize some of those cost savings as well.' "



What users look for before signing

The top factors determining which vendors will receive a request for proposal:

- Reputation
- References
- Existing relationships

The top factors determining which of those vendors will get the contract:

- Ability to offer a complete package (price, reputation, terms, resources and overall support)
- Flexibility and commitment to quality
- Cultural match and similarity
- Additional value-added capabilities

Source: Outsourcing Institute, New York



Take the pay-as-you-can plan

Users can negotiate favorable payment terms in order to be drawn into a long-term deal.

Because general business conditions can change dramatically from one year to the next, many users are reluctant to enter into long-term deals with outsourcers. But increased competition among vendors has forced many to accept more flexible payment terms in order to attract customers to five- or 10-year deals.

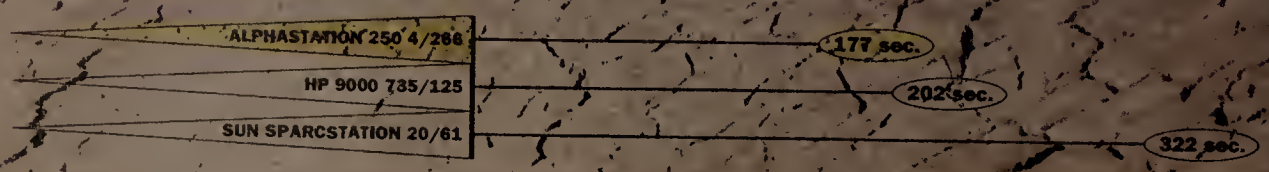
Attorneys are therefore advising their user clients to negotiate as flexible a contract as possible when it comes to payment schedules.

"You're dealing with an industry that's undergoing radical change monthly," says Clara Martin, a partner at Klein and Martin in Los Angeles. "You don't want to have tied yourself into a deal three years ago that will hamper you three years from now in a way you could never have possibly anticipated."

Contracts should allow for the ups and downs of a typical business cycle, Halvey says. "If you're simply paying X dollars a month for 10 years, you're in trouble. If you're willing to go into a long-term contract with a vendor, give the vendor a sense of how you plan to deploy your new resources [over time]. If you know you're going to need 10 fewer functions, you can work that into the contract to take advantage

Hard bargain, *page 76*

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Hard bargain

CONTINUED FROM PAGE 73

of spikes and valleys in your business."

"The flip side for vendors," Glasspiegel says, "is that they often make significant up-front investments that they expect to regain over time as efficiencies kick in. Vendors may want to be paid at a higher rate in the beginning of the contract term. Sophisticated customers will grant their service providers a reasonable profit but in return are insisting on as flexible an agreement as possible."

Doing better deals

IS users are negotiating more favorable provisions in outsourcing contracts

Concern of IS users	Provision for outsourcing vendors
Displaced key personnel	Keep on user's account
Other displaced personnel	Retrain or provide placement assistance
Benefits and severance	Offer same terms user had provided
Disaster recovery	Ensure user's business will stay operational
Lack of disaster recovery	Provide for damages as necessary
New savings or revenue	Agree to split with user
Changing revenue cycles	Allow for flexible payment schedules
Business-customer satisfaction	Establish performance benchmarks
Nonperformance of terms	Set penalties for late deliverables
Unacceptable error rates	Make credits on maintenance costs
Changing business needs	Allow for contract termination



Keep your eye on performance

New benchmarks are helping to ensure that vendors keep the customer satisfied.

As firms move into client/server configurations, it becomes more difficult to quantify things such as improved skills and productivity. As a result, a key change in outsourcing contracts is the new focus on business-customer satisfaction — that is, keeping the user's business customers happy.

"Outsourcing firms are now paying much more attention to users," says Harry Wallaesa, vice president of IS at Campbell Soup Co. in Camden, N.J. "We use customer service surveys for benchmarking. Now we link compensation for project executives to customer satisfaction to help ensure the outsourcers stay focused and link service levels with the vendor's ability to bid on additional business when other contracts come up."

In order to maintain business-customer satisfaction, contracts should clearly spell out the responsibilities of both parties. Often, performance of one party depends on the other.

"Say the outsourcing company is obligated to deliver a report by 5 p.m. every Friday," Grogan says. "Their ability to do so may depend on the customer providing them with data by 3 p.m. The contract needs to spell out what the consequences are — maybe the vendor's timetable slips by some factor if the user doesn't provide the data by 3 — if nonperformance by one affects the performance of the other. This makes the contract much more complicated and time-consuming because you have to think through all these issues.

"If the vendor doesn't get it to you by 5, you might include credits that will appear for every half hour that they are late," Grogan says. "Money is really the only thing that will get the vendor's attention. If the information is really important, have the demerits increase, say, $50 if you're 10 minutes late, but maybe $1,000 if you're an hour late.

"Some contracts also now have requirements that there be no more than X number of critical efforts in an application. Severe errors would be defined as those that seriously affect your business or cause the system to crash. If there are too many of these types of errors, you can call for things like substantial credits on maintenance costs," Grogan says.

Obviously, this has to be tailored to the contract. Specific provisions might also include things such as response-time measurements. For example, the client would take key transactions and define — carefully — response time.

"The contract might say, for example: When an operator sits down at a terminal, from the time they hit the Return key a complete screen that answers a customer's query has to be available in a half second, or whatever," Grogan says.

"The important thing is that both vendor and client must be in a position to be able to measure those benchmarks in the real world," he adds.



Have a good escape route

As conditions change during the life of the deal, make sure you can get out of the contract if it's no longer right for you.

The increased flexibility in outsourcing contracts is also leading to more flexible termination terms, according to Glasspiegel. In fact, some vendors are now offering very lenient termination clauses for competitive advantage.

"It can become a differentiator — those vendors who show more flexibility in the negotiations to allow for termination of the contract may actually get the contract," Glasspiegel says.

"Now, if after a period of years a client's business objectives change, they can get out of the deal without major penalties," Halvey says. "Maybe you were going to divest, and wham, you get acquired or start acquiring. You're different, you need a different deal, and that leeway needs to be written into your contract."

But this is a low-risk approach for outsourcers, Glasspiegel says, because rarely do users walk away from the deal. Instead, changes in their marketplace or organization may force them to renegotiate the terms of the contract.

"When the contract no longer fits the user's needs, both sides will sit down and renegotiate the contract. Very few users exercise the termination of the contract; they're too dependent on the outsourcer," Glasspiegel says.

This renegotiation of contracts is another trend in outsourcing, Glasspiegel says.

"We are being brought in more and more to help renegotiate terms in contracts that we had done years ago. In some cases, both sides didn't understand their needs clearly enough. In others, the needs have changed," he says.

But users and their attorneys are better at framing deals that allow for changing needs.

"The thing we worry about is that because vendors are so much more experienced at negotiating, and the customer is often a first-timer, that the customer is at a disadvantage," Glasspiegel says.

"It's rarely a level playing field, but customers are beginning to realize what they have to know." ■

Menagh is a freelance writer in New York. Associate editor David Weldon contributed to this report.

Executive Track

Norwest Corp. in Minneapolis has announced the appointment of **Webb Edwards** as executive vice president and chief technology officer of its technical services division. Edwards was previously executive vice president and general manager of information systems at First Interstate Bancorp in Los Angeles.

Alexander J. Trotman, chairman and chief executive officer of **Ford Motor Co.** in Detroit, was recently honored by **Gartner Group, Inc.** with its 1995 Excellence in Technology Award for executive leadership in information technology. The award was presented at Gartner's Reshaping IS Conference in Chicago. Trotman was honored for his leadership in the company's implementation of an enterprisewide networked computing environment to streamline design and production of new cars. The "Global Studio" enables engineers in the U.S., Europe and Asia to concurrently share visual information and work on three-dimensional models, resulting in enhanced design control, reduced international travel expenses and shorter design cycles.



Bricker & Associates, Inc., a Chicago-based productivity consulting firm, has announced that **Sheleen Quish Fryer** has been named senior vice president. Prior to the appointment Fryer was senior vice president and chief information officer at Blue Cross/Blue Shield of Illinois.

Continental Airlines has announced that **Daniel P. Garton** has been appointed CIO and senior vice president. Garton had previously been chief financial officer and executive vice president at the airline. He replaces former CIO **Barry Simon**, who will now focus on Continental's European operations.

Rohn & Haas C., a Philadelphia-based chemical concern, has announced that **David A. Stitely**, 55, director of information technology, has been named a vice president of the company.

Alexander Consulting Group in Lyndhurst, N.J., has announced the appointment of **Ellen G. Braverman** as director of the firm's national systems group. Braverman was director of information services at American Home Products.

Calendar

AUG. 13 - SEPT. 20

MANAGEMENT

Identifying and Maximizing Business Applications for Networked Multimedia. Chicago, **Aug. 28-29** — A conferenee addressing key issues in optimizing and implementing multimedia networks. Seminars will include "Entering the Virtual Workplace," "Multimedia Standards" and "Determining the Organizational Rcquirements for Building a Networked Multimedia Infrastructure." Fees: $1,195 per person; $1,095 with three to four attcndees from the same company; $950 pcr person with five or more attendees. Contact: ICM Conferenees, Inc., Chicago, Ill. (312) 540-3083.

The Information Warfare Conference. Arlington, Va., **Sept. 7-8** — Focus will be on personal privacy, industrial and eeonomic espionage and global information warfare. Contact: Paul Gates, National Computer Security Association, Carlisle, Pa. (717) 258-1816.

1995 International Customer Service Association Annual Conference. Orlando, Fla., **Sept. 9-13** — Theme: "In Search of New Customer Serviee Galaxies." Keynote spcakers will include Tom Peters, founder of the Tom Peters Group, and Les Brown, author and television personality. Contact: International Customer Service Association, Chicago, Ill. (800) 203-4272.

IS Expo Fall '95. Anaheim, Calif., **Sept. 10-13** — Topics will include the impact of client/server on mainframe operations, distributed systems management using remote support, continuous quality improvement in the data center, the data center's changing role, managing help desk performance and customer expectations and enterprisewide monitoring. Contact: Association for Computer Operations Management, Orange, Calif. (714) 997-7966.

TECHNOLOGIES

GTG '95: Second Annual Conference, Exposition and DataMart. Reston, Va., **Sept. 5-8** — Focus is on geographic technologies, what works and what doesn't from an organizational and technological perspective. Fees: government, university and nonprofit employees, $350; students, $195; all others, $450. Contact: GIS World, Inc., Conference Division, Fort Collins, Colo. (970) 223-4848.

DiskCon USA '95 Trade Show and Conference. San Jose, Calif., **Sept. 6-7** — Focus is on suppliers of technology, equipment, materials and services to the data storage industry. Contact: International Disk Drive Equipment and Materials Association, San Jose, Calif. (408) 720-9352.

Embedded Systems Conference. San Jose, Calif., **Sept. 12-15** — For software developers and engineers involved with embedded design. Keynote speaker: cartoonist Scott Adams, creator of the eomic strip "Dilbert," who will speak on humor in the workplace. Contact: Shcrry Nykiel, Miller Freeman, Inc., San Francisco, Calif. (415) 905-2354.

Establishing Security and Combating Financial Cybercrimes on the Information Superhighway. Chicago, **Sept. 13-14** — Topics will include security requirements for the Internet, threats to financial security in cybcrspace and tools for securing elcctronic commerce. Contaet: Ralph Gaillard Jr., International Communieations for Management, Chieago, Ill. (312) 540-3845.

Client/Server Economics Summit. Washington, **Sept. 18-20** — Topics inelude distributed systems support, real-world advantages of deploying a request-traeking system, applying advanced systems and profiting from emerging teehnology, eontrolling the cost of migrating to a client/server environment, networking challenges of client/server and deploying mission-critical systems in a client/server environment. Fees: $1,095 until Aug. 18; $1,195 after Aug. 18. Contact: Mary Clare Bennett, Client/Server Eeonomics Summit Registration, San Franciseo, Calif. (415) 905-2267.

USER GROUPS

SHARE Technical Conference. Orlando, Fla., **Aug. 13-18** — Theme: "Conneeting to the Future." Keynote spcakcr: Nicholas M. Donofrio, IBM senior vice president and group executivc. Speakers include Paul Gillin, editor of *Computerworld*, who will discuss "Information Systems in the '90s: New World Disorder." Fec: $560. Contact: SHARE Technical Conference Registration, Chicago, Ill. (312) 822-0932.

INDUSTRIES

Manufacturing Execution Systems Roundtable 4. Chieago, **Sept. 13-14** — Focus is on improving manufacturing produetivity and quality with integrated manufacturing execution systems. Contaet: Manufaeturing Execution Systems Assoeiation, Pittsburgh, Pa. (412) 781-9511.

AMA offers skills, management courses

Looking to polish your project management skills? Need tips on implementing a disaster recovery plan? The American Management Association (AMA) may be able to help with its fall and winter course offerings.

Professional skills topics include systems analysis and design, structured systems, internal consulting skills, information systems project management, writing user manuals and effective presentation skills. Information technology topics include using the Internet for business and managing telecommunications.

Management topics include disaster recovery, strategic planning, quality review techniques, achieving excellence, re-engineering IS and strategic outsourcing. Business systems applications topics include integrating systems and electronic data interchange. Project management topics include team-building skills and management skills.

Each course will be offered several times in various cities. For information, contact the AMA, P. O. Box 169, Saranac Lake, N.Y. 12983 (800) 262-9699.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

SEND ANNOUNCEMENTS TO:

David Weldon, Associate Editor/Management, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931.



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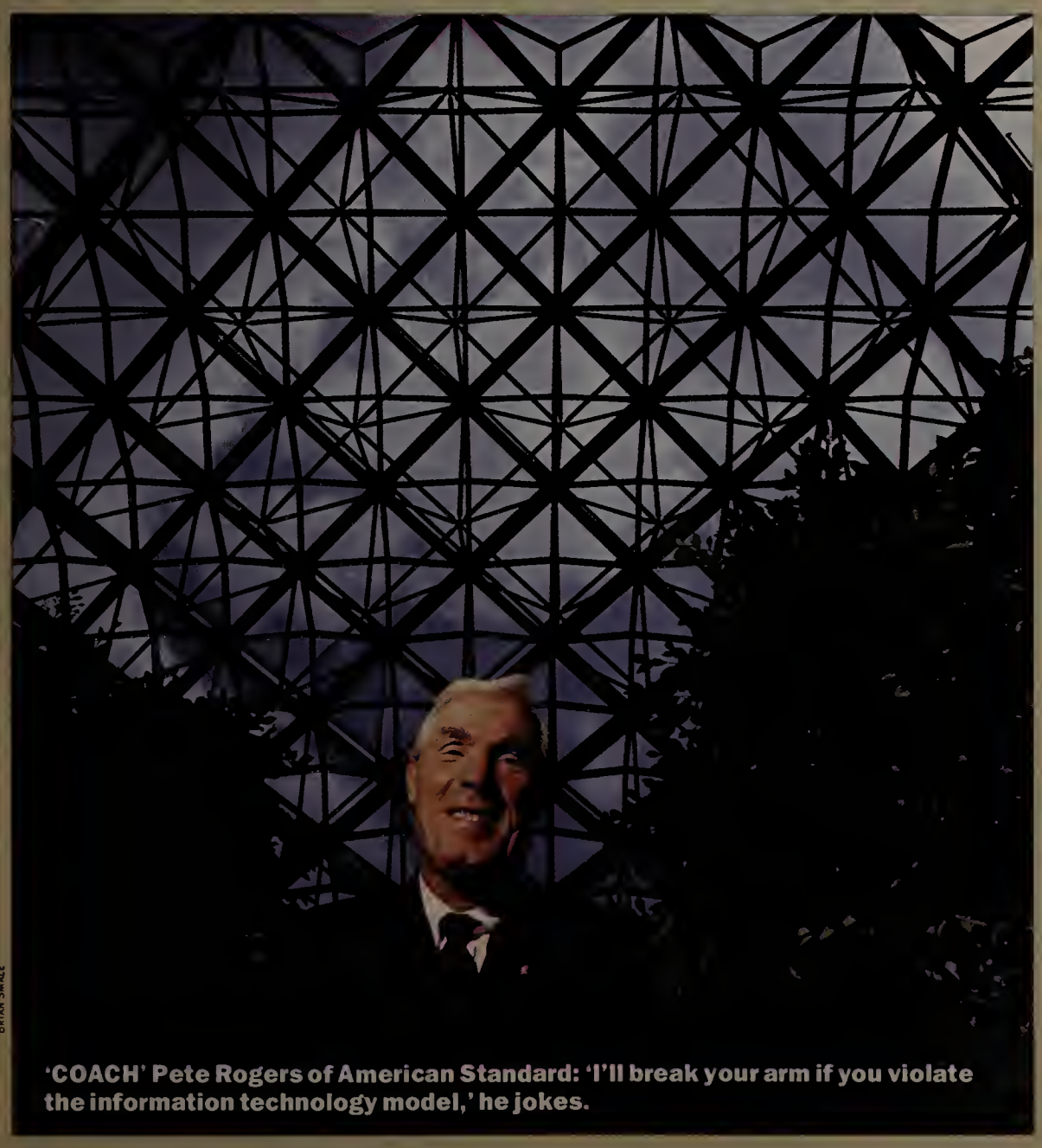
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Re-engineering the Workplace

SPECIAL QUARTERLY REPORT ON RE-ENGINEERING

FLUSHED with SUCCESS

BY JOSEPH MAGLITTA



BRIAN SMALE

'COACH' Pete Rogers of American Standard: 'I'll break your arm if you violate the information technology model,' he jokes.

American Standard recast itself through re-engineering. The company's new shape may be a preview of your tomorrow.

Continued from page 1

Through re-engineering programs championed by Chairman and Chief Executive Officer Emmanuel A. Kampouris, American Standard has been able to nearly eliminate $325 million in annual debt payments. Moreover, manufacturing cycle times have been cut from months and weeks to days and hours. The firm, which is part employee-owned, went public in March.

Wall Street analysts laud the revitalized manufacturer—parent of Trane International, WABCO and Ideal-Standard — as a successful turnaround story.

"They're doing a great job," enthuses Barry Bannister, vice president of research at S. G. Warburg & Co., a Wall Street investment firm.

How different is information systems life in a post-re-enginecred organization? Look at Pete Rogers' business card and you begin to see that things at American Standard are anything but standard these days.

The card reads: "Vice President/Coach of Change." An unusual title, but one befitting the technology leader of a firm that has no functional depart-

Success, *page 80*

INSIDE:
Get the latest information on re-engineering tools, events and research

CONTINUED FROM PAGE 79

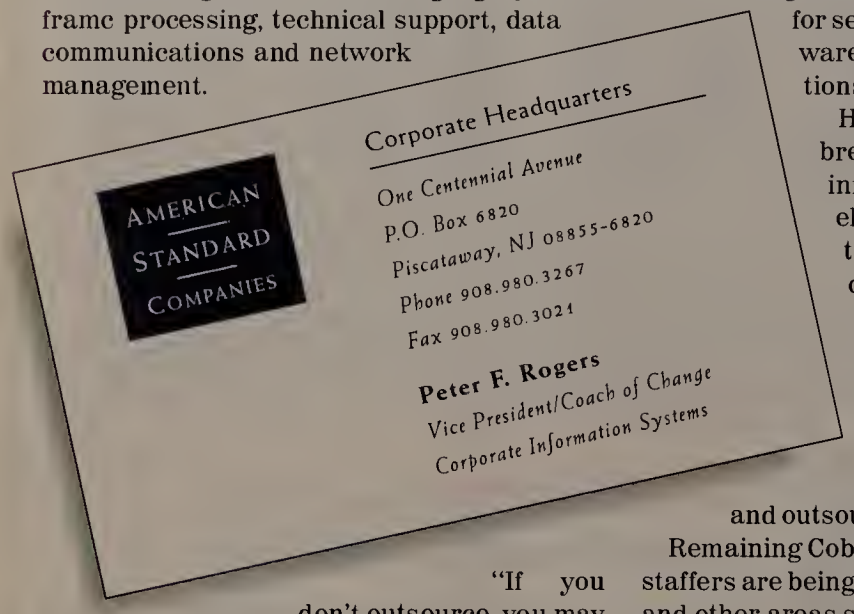
ments and no central IS staff and requires its 38,900 employees to be schooled in business process theory.

Trendy? Risky? Crazy? General Electric Co. CEO Jack Welch doesn't think so; he cites American Standard as a model. Ditto for Ford Motor Co. In fact, some industry consultants say American Standard's "process-based organization" offers many companies a glimpse of their own tomorrows.

Initial work focused on improving manufacturing and slashing debt; it then spread to office functions, Vess says. The goal: boost profit margins and market share while slashing working capital. So what kind of technology strategies make sense amidst such massive change?

• Transitional outsourcing

To support these goals, American Standard is halfway through a three-year, worldwide shift to open client/server computing. Its strategy: finance the move with $5 million to $6 million in annual savings from outsourcing legacy mainframe processing, technical support, data communications and network management.



"If you don't outsource, you may never have the time and resources needed to move to the new world of client/server," explains Rogers, a 26-year company veteran.

In the U.S., the Genix Group in Pittsburgh holds a $6 million outsourcing contract with American Standard. In addition, IBM's Integrated Systems Solutions Corp. handles the automotive facilities in Hannover, Germany; Computer Sciences Corp. serves Ideal-Standard in Brussels.

The plan calls for unplugging eight IBM 3090 mainframes by Dec. 31, 1997. Eventually, Rogers says, all enterprise servers (running NT or Unix), network services/management and application development may also be outsourced.

• Decentralized information technology

Among the most dramatic changes is American Standard's new structure. By year's end, traditional departments in the three main business units will have been replaced by five "processes": business strategy, product development, order acquisition, order fulfillment and customer service.

About three-fourths of the 500 IS employees are assigned to a process and decentralized, Rogers says. The rest work in an IS "center of excellence," supporting client/server and other key technologies.

As coach, Rogers has no operating responsibilities or IS staff. Rather, his job is to disseminate technology information, consult with process owners and take a lead role in setting and enforcing standards. The only two people who report to him are process educators with heavy IS backgrounds.

IS policy is set by an eight-member council. The group, headed by Rogers, meets for 2½ days, four times a year.

• Heavy standards

Rogers says the company promotes joint technology decisions based on centralized corporate guidelines, with business unit freedom.

"Without standards, client/server degenerates into chaos," he says. Thus, American Standard has close ties with 17 global partners, including Microsoft, SAP AG and Oracle Corp. A companywide information architectural model gives business units a framework for selecting and integrating hardware, software and communications.

How strict is Rogers? "I'll break your arm if you violate the information technology model," he jokes. A new IS application review board ensures compliance.

• Retooling IS

Despite the shakeups, only about 50 to 75 technical staffers supporting CICS, VTAM and MVS have been let go since re-engineering and outsourcing began, he says.

Remaining Cobol programmers and other IS staffers are being trained in Visual Basic, Unix and other areas such as applications administration.

Rogers says information technology has had a difficult time keeping up with change. "You can re-engineer a lot faster than you can develop systems," he says. As a result, the company uses more packaged software and third-party applications.

Vess adds that "mainframe mentality" is a problem among end users. "People are spoiled," he says. "They're used to systems people doing everything for them."

Still, Rogers says his $60 million IS budget is 1.4% of sales, down from 1.8% in 1990. He projects that figure will dip to 1% by 2000.

John R. Costanza, president of the JCIT Institute of Technology in Englewood, Colo., says further dramatic gains depend on how well American Standard can transplant demand flow technology beyond manufacturing.

There's no turning back. "Re-engineering is not a technology project," Rogers says. "It's a business program." ■

Maglitta is *Computerworld*'s senior editor, corporate strategies.

Best of breed

Standard products in American Standard's re-engineered organization include the following:

- Microsoft Mail
- PeopleSoft financials
- JCIT Flowpower for manufacturing
- Oracle databases
- SAP and Platinum for order entry and logistics
- CFM's TeamFlow process mapping software

Re-engineering Digest:

TOOLS

CFM, Inc. in Bedford, Mass., has introduced two network versions of TeamFlow4: Work Processor. The integrated Windows software package is aimed at re-engineering teams and other process designers. A 10-user license costs $2,000. On-line demo at http://www.teamflow.com/teamflow. Contact: (617) 275-5258.

Logic Works, Inc. in Princeton, N.J., and CenterView Software in San Francisco are jointly developing a client/server tool set based on Visual Basic 4.0. New products will integrate the Erwin modeling tool and Choreo application development environment. Ships in fourth quarter. Contact: (609) 252-1177 or (415) 873-1295.

Sterling Software, Inc. in Atlanta has announced an object-based Windows development environment called Key. The Key family integrates business process re-engineering, workflow and visual development tools for creating client/server applications. Beta testers include the National Association of Insurance Commissioners. It has a third-quarter ship date; client/server pricing starts at $45,000. Contact: (404) 231-8575.

Arcland, Inc. in Malvern, Pa., is shipping FlowModel, a Windows-based tool for depicting, analyzing and communicating complex business processes, systems and models. The price is $495. Contact: (610) 993-9904.

Arcland also plans to ship in October a new version of its flowcharting/benchmarking/analysis suite. Solution Pack includes Arcland's FlowModel 2.0 and Benchmarker Plus 3.0 from Fleet & Partners, Inc. Available for DOS, Microsoft's Windows 3.1 and Windows NT. Cost: $495. Contact: (610) 993-9904.

Computer Systems Advisers, Inc. in Woodcliff Lake, N.J., has announced an integrated business modeling workbench. Silverrun-Enterprise lets users build and manage companywide client/server models including business processes, conceptual, logical and physical models and corporate data warehouses. Cost: $4,000 per user. Contact: (201) 391-6500.

Ptech, Inc. in Cambridge, Mass., has announced Version 3.1.11 of Framework. Object-oriented methods and tools let users prototype, capture, design and automate business processes. Starter kit costs $5,000 for Microsoft's Windows NT; $6,000 for Unix. Contact: (617) 577-71

PROJECTS

MCI Communications Corp. is re-engineering sales and service at 100 U.S. sites. Technology it is using includes Aurum Software's SalesTrak, IBM's ThinkPad 755CD, Gupta Corp.'s SQLBase and Oracle's database management system. The effort will affect 5,000 representatives.

Unisys Corp. completed a six-month business process re-engineering project at the Michigan Department of Transportation. The effort cost $746,000. Annual payoff: $2 million saved from speedier hiring, reassignments and more efficient payroll.

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To: Our Customers and Partners
From: Brad Silverberg
Re: THANK YOU!

We are finally at the end of the long journey, and I want to thank all of those who have been our companions. We have completed development of Windows® 95, an operating system that will allow computer users everywhere to get more out of their personal computers. We have been helped by people across the spectrum: from individuals such as John R. Garman, Chief Information Officer at NASA Johnson Space Center, to Adam Baratz, who is nine years old, to software developers, computer system manufacturers, and many others. We could not have made it without the help we have received from all of you.

A key part of our journey was the Preview Program—the program whereby over a million individuals got to use an early-release copy of Windows 95. It was also a chance for us to learn about the issues that you'll face in your own experiences with Windows 95. I would like to report to you what we have learned.

We learned things about our product that we needed to fix. As a result we have improved setup and our support for your existing software and hardware. Along the way we fixed many bugs that have helped us improve the product.

We also used the Preview Program to test our support capabilities for Windows 95. We have trained hundreds of support engineers and have made arrangements with five companies who will help us provide support for Windows 95. From the size of the initial orders we have seen placed by retailers for Windows 95, it is possible that there may be delays in getting through to our support personnel during the initial weeks. We apologize if you experience any inconvenience and want you to know that we are working hard to minimize this. We will have almost as many people taking calls for Windows 95 as we have taking calls for all our other products combined and will be active on electronic forums to help, too.

But perhaps the most common theme to emerge was that people need accurate information direct from Microsoft to help them evaluate or plan their migration to Windows 95. To address this we have created the WinNews Newsletter, where you can get our best, no-nonsense assessment of:

- the strengths and weaknesses of Windows 95
- its compatibility with existing software and hardware
- the best practices and tools to help minimize cost of deployment

To join our WinNews Newsletter mailing list, send email to **enews18@microsoft.nwnet.com** with *subscribe winnews* as the only text in the body of your message; or visit our Windows 95 forums on CompuServe, America Online, or The Microsoft Network, or our Internet web page at **www.windows.microsoft.com**.

We think Windows 95 is a wonderful product and will be a significant improvement to Windows® 3.1. It has been made immeasurably better as a result of your help.

I, and all the members of the Windows 95 product team, thank you.

Brad Silverberg
Senior Vice President
Personal Systems Division
Microsoft

A Fast Roundup of New Products, Ideas and Resources

The U.S. government has begun more than 200 business process re-engineering projects in the past 18 months. Drivers: to lower costs and curb runaway IS projects.

Royal Caribbean Cruises Ltd. in Miami has begun an 18-month business process re-engineering effort aimed at faster, more efficient crew hiring and deployment. Its partner is KMPG Peat Marwick. The new Crew Acquisition and Movement system will save millions yearly, says Ron Sleman, Royal Caribbean's information technology vice president.

OshKosh B'Gosh in Oshkosh, Wis., is celebrating its 100th anniversary by re-engineering. Activity-based management is key to major revamps in its manufacturing, administration and distribution areas. Goal: Slash product development in half — to 12 weeks. Contact: (312) 856-0001.



RESEARCH

Nearly 75% of 400 large North American firms polled by Deloitte & Touche will increase their number of business process re-engineering projects through 1996. Average in 1994: 3.6 projects.

New product development is the next megaprocess targeted for business process re-engineering efforts, according to 80 chief financial officers at large companies polled by Ernst & Young. Another Ernst & Young study found that the Top 100 U.S. banks plan to spend $2.9 billion on re-engineering in 1997.

Outside business process re-engineering consultants are used by 88% of Fortune 500 companies polled by the Omicron Center for Information Technology Management in Mountain Lakes, N.J. Top evaluation criteria: specific process experience, 72%; skills transfer capability, 67%; methodology used, 67%; client references, 61%; fees/cost, 61%; specific individual experience, 55%; and specific information technology experience, 33%. Contact: (201) 335-0240.



EVENTS

The Second Annual National Business Process Reengineering Conference. Arlington, Va., Sept. 18-21. Free. Contact: (703) 761-0646.

Re-engineering 1995: Success Stories and Impact on the Information Technology Organization. Oct. 18, Liberty Corner, N.J. Aimed at CIOs and technology executives. Contact the Computer Power Group at (904) 494-9333.



ON-LINE

World Wide Web page: WARIA Online. A treasure trove of books, education programs, consultant listings, conferences and other Web pages. Posted by the Workflow and Reengineering International Association (http://www:waria.com/waria).

Discussion list: BPRL-Digest. A little heavy on tool talk, but a hopping international forum for debate on re-engineering topics from Integration Definition Method to consultants' Trojan horses. To subscribe, send E-mail to LISTSERV@IS.TWI.TUDELFT.NL. Message: sub bprl yourname.

Discussion list: Business Process Management and Improvement. To subscribe: majordomo@quality.org. Message: subscribe bpmi your name.



CONSULTANCIES

Symmetrix, Inc. and Science Applications International Corp. formed a partnership aimed at bringing business process re-engineering and fast system delivery to finance, banking and insurance firms worldwide. Contact: (617) 862-3200 or (615) 481-2166.

Andersen Consulting combined telecommunications, cable, wireless and satellite businesses into a communications industry group. Partner Larry Levitan will lead the 3,000-consultant practice. Contact: (312) 580-0069.

James Martin & Co. in Reston, Va., formed a utility industry practice. A new pharmaceutical unit was created last December. Contact: (703) 620-9504.

Coopers & Lybrand High Tech Consulting in Boston is now headed by Alex Beavers, former business process re-engineering and quality leader. Contact: (617) 478-5292.

Unisys, Inc. is staffing up its Worldwide Enabling Change Practice in Blue Bell, Pa. The unit supports Unisys' business process re-engineering, outsourcing and integration efforts. Headed by Ronald Sims, formerly of G. E. Aerospace, Martin Marietta Corp. and the U.S. Army. Contact: (215) 986-5046.



QUOTES

"For a lot of CIOs — provided they rise to the challenge — re-engineering is a ticket that gets them a seat at the top table. The ones who don't get a ticket on the night train." — Michael Hammer, Hammer and Co.

"Questions we might ask: Do those undergoing change have necessary talent? Skills? Time? Resources? Support?" — Keith E. Ferrazi, Deloitte & Touche



RESOURCES

Research report: "Process Product Watch: Vol. 4." Detailed listing, analysis of latest work management technologies and business process re-engineering tools. Cost: $235. Internet: miers@enix.co.uk; or call 44-181-332 0210.

Book: *After Re-engineering: Organizing for Growth* by Richard K. Lochridge. Guidelines, examples, insights. Contact: (800) 829-6759.

List: Re-engineering benchmark services, "Systems Reengineering Economics," February 1995. Contact: (619) 438-8100.

Book: *The Change Management Toolkit for Reengineering* by Gary Skarke, et al. How-to book includes worksheets, techniques, time lines. Cost: $495. Contact: (800) 381-3033.

Book: *Techniques for Business Process Redesign* by Lynn C. Kubeck. Overview of concepts and implementation. Cost: $34.95. Contact: (800) 225-5945.

Magazine: Special business process re-engineering issue. *American Programmer*, June 1995. Contact: (617) 648-8702.

Videos: "The Reengineering Roadmap" and "Re-engineering the Future," by Raymond L. Manganelli. Multipart American Management Association videos give solid foundations in how-to and what it is. Preview $50, rent $190, buy $695. Contact: (800) 225-3215.

Book: *The Workflow Imperative* by Thomas M. Koulopoulos. Where workflow meets business process re-engineering in the real world. Cost: $32.95. Contact: (606) 525-6600.

Book: *Reengineering Management* by James Champy. This sequel argues that bosses better change their acts. Cost: $25. Contact: (800) 331-3761.

Magazine: *Benefits & Compensation Solutions*, June 1995, is a Technology Special Report. It covers human resources, benefits and compensation applications; client/server technology and business process re-engineering for human resources functions. Contact: (800) 743-9101.

Magazine: *SAS Communications*. This special issues focuses on use of SAS Institute, Inc.'s software in business process re-engineering. Contact: (916) 677-8000.

White Papers: "Distributed Object Computing for Business" and "Integrated Project Support Environments" by the Technical Resource Connection (TRC). They are short, clearly written primers that put choice technical meat on business process re-engineering bones. See TRC's Web page at http://www.trcinc.com/ or call (813) 891-6084.

— Compiled by Joseph Maglitta

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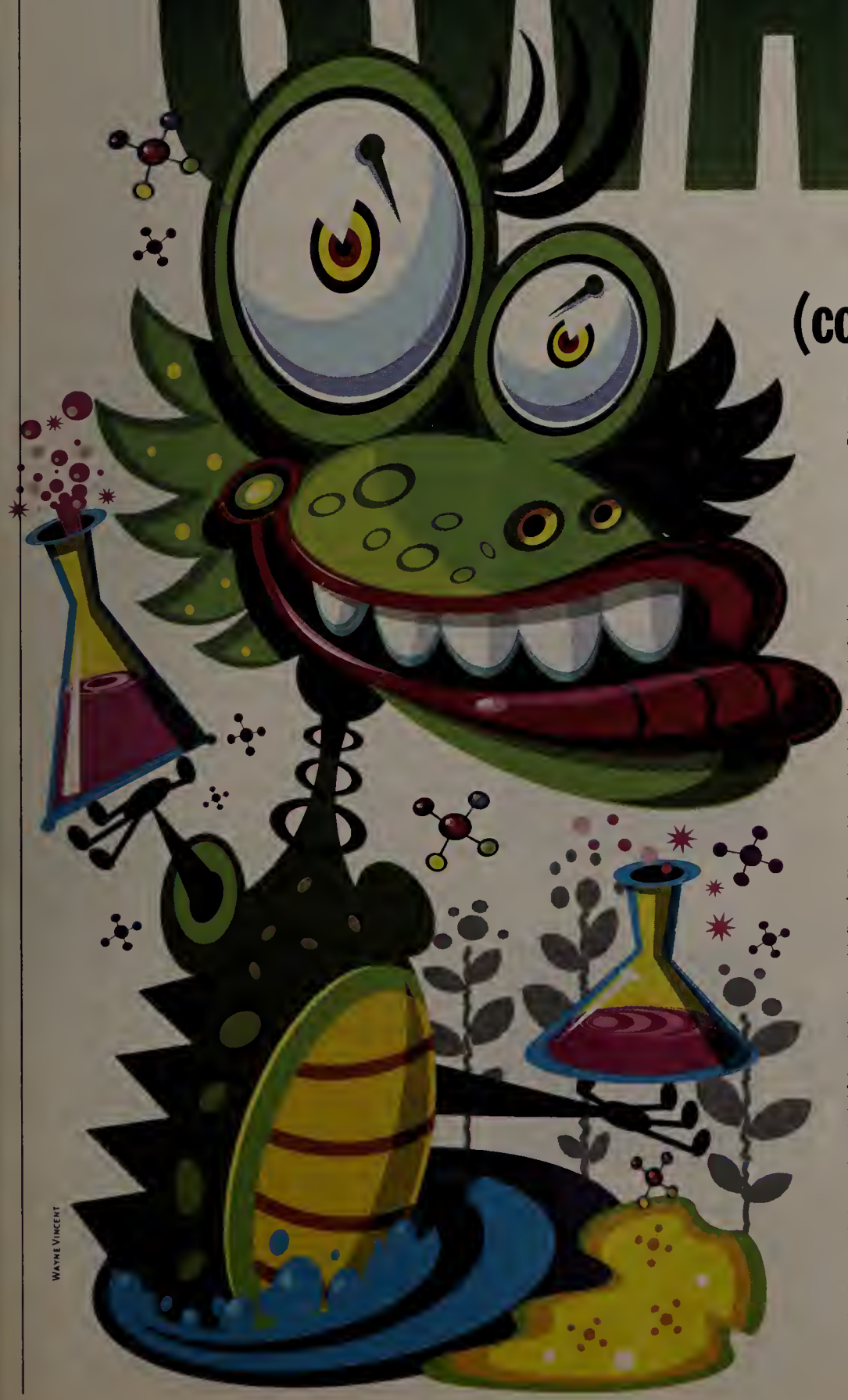
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SWAMP thing

(coming to a data center near you)



WAYNE VINCENT

No longer a fantasy, the merger of the biological and computing sciences is happening like never before in areas such as DNA computing, bacteria-based computer memory systems and electronic microchips designed to mimic human brain cells.

BY THOMAS HOFFMAN

It has festered in the earth's salt marshes for more than 3.5 billion years, a bacterium that has managed to thrive under the worst possible conditions in spite of everything that man and nature have thrown at it.

Now, millions of years after dinosaurs last ruled the earth and man has taken his place at the top of the pecking order, this bacterium is rising up from the dark, briny mass to unleash its fury on the computer industry.

Call it swamp thing. Or call it an optical memory system powered by marsh-dwelling bacteria.

It's one of the many examples of how biotechnology and computational sciences are merging like never before. These next-generation systems — which follow technologies such as artificial intelligence, natural languages and neural networks — include DNA computing, genetic algorithms and computer chips embedded with human brain cells.

Since AI never really met the hype promised for it 10 years ago, most biocomputing proponents are taking an understandably guarded approach before touting their successes.

"We don't have enough results to talk quantifiably about our research yet," says James J. Hickman, a surface chemist at Science Applications International Corp. in McLean, Va. The company has been working with the Naval Research Laboratory in Washington to integrate organically grown neurons from laboratory rats into solid-state electronic devices.

Cooperation between government, industry and university research labs could help make prototype bioelectronic devices attainable within three to five years, according to Hickman.

Despite the guarded optimism, there's still a great deal of excitement about the potential benefits to be realized from the combination of biological and information technologies. For example, Leonard Adelman, a computer science professor at the University of Southern California, stunned the scientific community last fall when he described how DNA

Swamp thing, *page 84*

Call It Swamp Thing

SWAMP thing

CONTINUED FROM PAGE 83

strands can be used more efficiently than supercomputers to tackle mathematical calculations.

Although Adelman's DNA computers have performed individual tasks slower than supercomputers — 30 minutes on average — they use billions times less energy than conventional computers and can handle billions of calculations at once using trillions of DNA molecules.

He has also discovered that a DNA computer memory bank containing a pound of DNA molecules can store more information than the memories of all the computers that have ever been built. The molecules are suspended in roughly 1,000 quarts of fluid in a one-square-yard tank.

Late last year, Adelman reported in *Science* magazine how he had used DNA to solve a version of the traveling salesman problem. A salesman has to visit seven cities; each city is connected by a one-way road to two other cities. What is the shortest path for the salesman to follow? Using DNA strands in test tubes, Adelman was able to come up with an answer within a week. The dilemma has taken conventional computers years to solve.



Because bacteriorhodopsin, a swamp bacteria, takes on different readily detectable states when exposed to light, it can act as a switch in protein-based optical computers. Cubes of the bacteria can hold close to 1T byte of memory.

Adelman has had preliminary discussions with IBM and a few other vendors about the commercial viability of DNA computing, which is at least five years from reaching the market, according to a USC spokesman.

"It won't replace a PC [because] it's not good for smaller problems," says Eric Baum, a senior research scientist at NEC Research Institute in Princeton, N.J. But DNA computers are good for large, complex problems "that you couldn't solve any other way," Baum says.

The brain makers

Hickman and his partners at the Naval Research Laboratory aren't the only ones investigating computer/brain simulations. For example, Nestor, Inc. in Providence, R.I., began developing an Advanced Research Projects Agency-sponsored chip in 1990 that's designed to mimic the human brain.

The chip contains 1,024 silicon "neurons" that have performed up to 57 billion instructions per second on a 33-MHz circuit. That compared favorably with a 100-MHz Intel Corp. Pentium chip that, with no pipeline constraints, can run up to 200 million instructions per second, according to Mark Laird, a project engineer at Nestor.

Nestor began shipping its NI 1000 chip in single-chip Industry Standard Architecture development cards last June. The company is readying the chip for four-chip Peripheral Component Interconnect bus cards that shipped late last month and VME cards that will begin shipping this month, Laird says.

Neural networks — a combination of hardware and software technologies designed to mimic the workings of the human brain — continue to make inroads in commercial computing. For example, the Chicago Police Department is using a neural network system to analyze data on its 12,500-person police force to identify police officers who are at risk for misconduct. The neural network software has identified 91 officers at risk, roughly half of whom were already enrolled in misconduct counseling programs.

Neural networks have also gained widespread acceptance by Wall Street brokerages to predict changes in the stock market, by banks to analyze data to detect credit-card fraud and by airlines to predict how many passengers will show up for flights in order to optimize their loads.

Neural network technologies are also being applied to handwriting and speech recognition systems. For example, Lexicus, Inc., a Palo Alto, Calif.-based division of Motorola, Inc., offers handwriting recognition software called Lexicus Longhand. Longhand is a Windows-based system that relies on neural network technology to help recognize common words, proper words and specialized vocabulary.

From the deep

In the Syracuse University optical memory experiments, a protein called bacteriorhodopsin is encapsulated into an optically transparent polymer. Bacteriorhodopsin is found in the purple membrane of a salt marsh-dwelling microorganism known as Halobacterium halobium. The rhodopsin protein, found in human eyes, lets us see in dim light.

Using laser beams, scientists at the university have been able to write and read information into and out of the protein, according to Robert R. Birge, a chemistry professor and director of the Center for Molecular Electronics at the university. He is also research director for the New York State Center for Advanced Technology in Computer Applications and Software Engineering at Syracuse University.

Birge began working on his research in the late 1970s at the University of California at Riverside. At that time, reports were circulating that the Soviet Union was trying to leapfrog Western research with its own rhodopsin storage efforts.

He says that protein-based optical computers and memories should reach the commercial market in the next three to eight years, depending on how quickly relative technologies such as charge coupled devices (CCD) and charge integration devices (CID) can be brought to the market at affordable prices.

CCD arrays, which are used in the lenses of video cameras to convert light into electrical signals, are relatively inexpensive at $50 to $100. But higher-end CCDs — such as those in the 1,024- by 1,024-pixel range — still cost several hundred dollars and are currently overpriced for commercial use with bacteriorhodopsin, Birge says.

The "swamp thing" may be in your data center by the turn of the century, but some in the industry are still skeptical as to when — if ever — other biological computing devices such as DNA computers will become commercialized. ■

Hoffman is *Computerworld*'s senior editor, user strategies in the Mid-Atlantic bureau.

Tell me about it

Sci-fi authors sound off on the merger of biotechnology and computer science



H. P. NEWQUIST
Author, *The Brain Makers: Genius, Ego and Greed in the Quest for Machines That Think* (Sams Publishing, 1994)

Any new technologies as advanced as organic [substances] and biological [products] fall into the realm of other past technologies that promised to be wonderful but got shot down because of the hype — AI, natural languages, neural networks.

DNA computing and genetic algorithms also lend themselves to what I call the "gaga" effect or "save the world" computing. But I think these have uses and will be incorporated into other applications, just as AI has been. They won't take the place of database searches and word processing; they'll have a much more generic use such as number crunching.



WILLIAM GIBSON
Author, *Neuromancer* (Berkeley Publishing Group, 1984)

Our great-grandchildren won't even know that they *have* computers because they will *be* computers. As the interface [between man and computer] evolves, the computer itself will become invisible.



DOUGLAS JOHNS

PIERS ANTHONY
Author, *Kilobyte* (Ace/Putnam, 1993), *Total Recall* (Avon Books, 1990)

I'm intrigued by this crossover, the way biological systems are being used to solve problems like the traveling salesman's fastest route. Of course, there are ethical issues at stake here. If you start killing people and putting their brains into machines, then you'll have a real ethical problem.



WILL VAN OVERBEEK

BRUCE STERLING
Author, *The Hacker Crackdown: Law and Disorder on the Electronic Frontier* (Bantam, 1993)

I was at a brain mime conference [about technologies that mimic brain functionality] in Munich recently where there were discussions surrounding computational neurology. It's difficult to get computers to behave like the human brain, particularly since neurons have a tendency to stream from place to place. I think [biocomputing] is all theoretically possible, but it's like what everyone once said about AI: "Hey, we'll have computers that are smarter than we are by 1991." It's a lot like the work being done with skin cells, where you can have a hide like a rhinoceros and change colors. It's philosophically interesting, but I don't see any red-hot business applications coming out of this. — *Thomas Hoffman*

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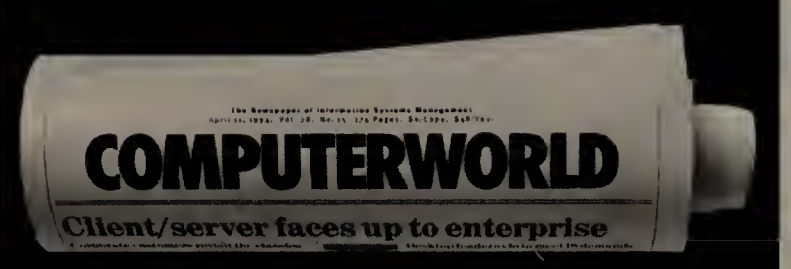
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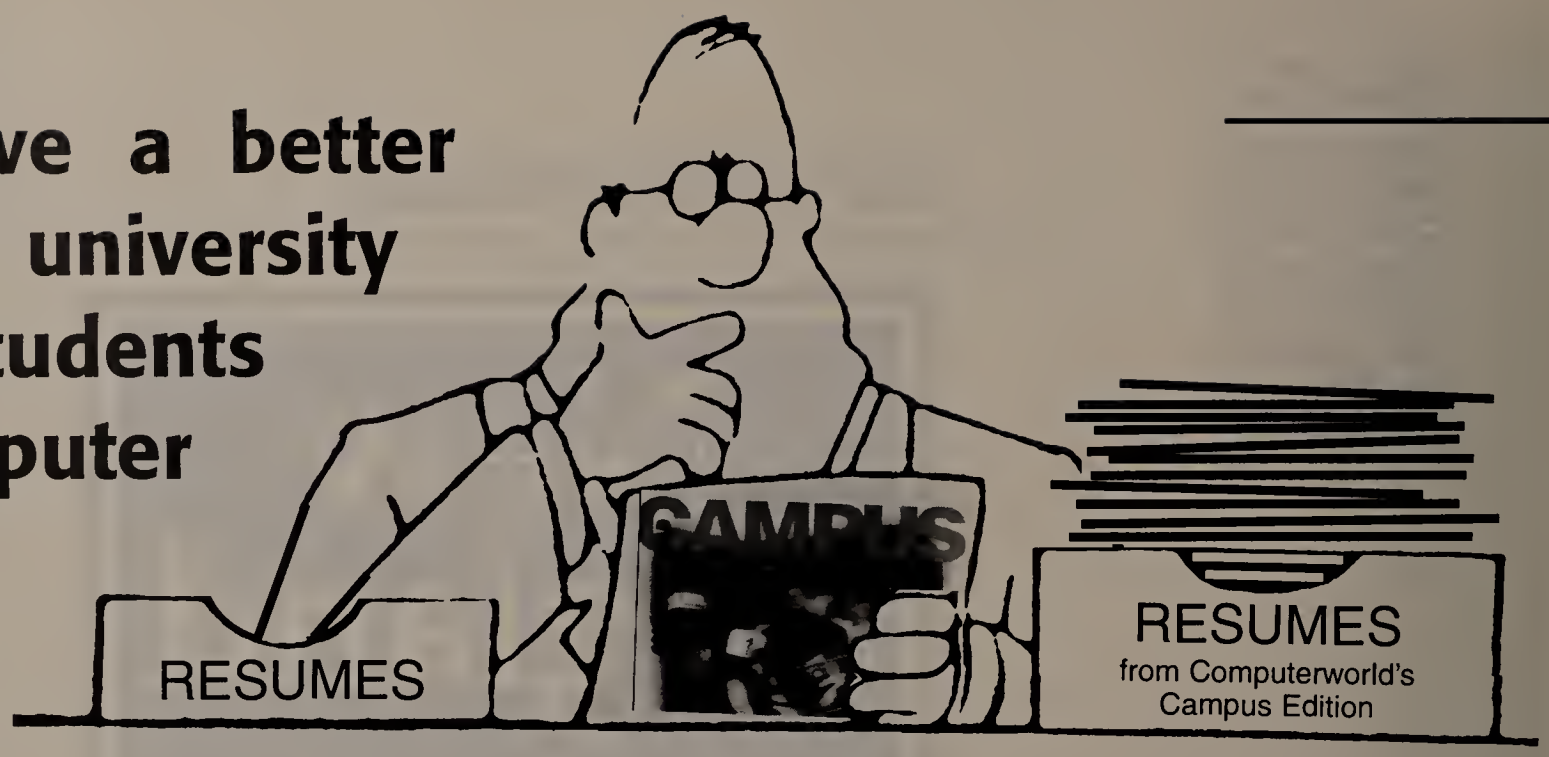
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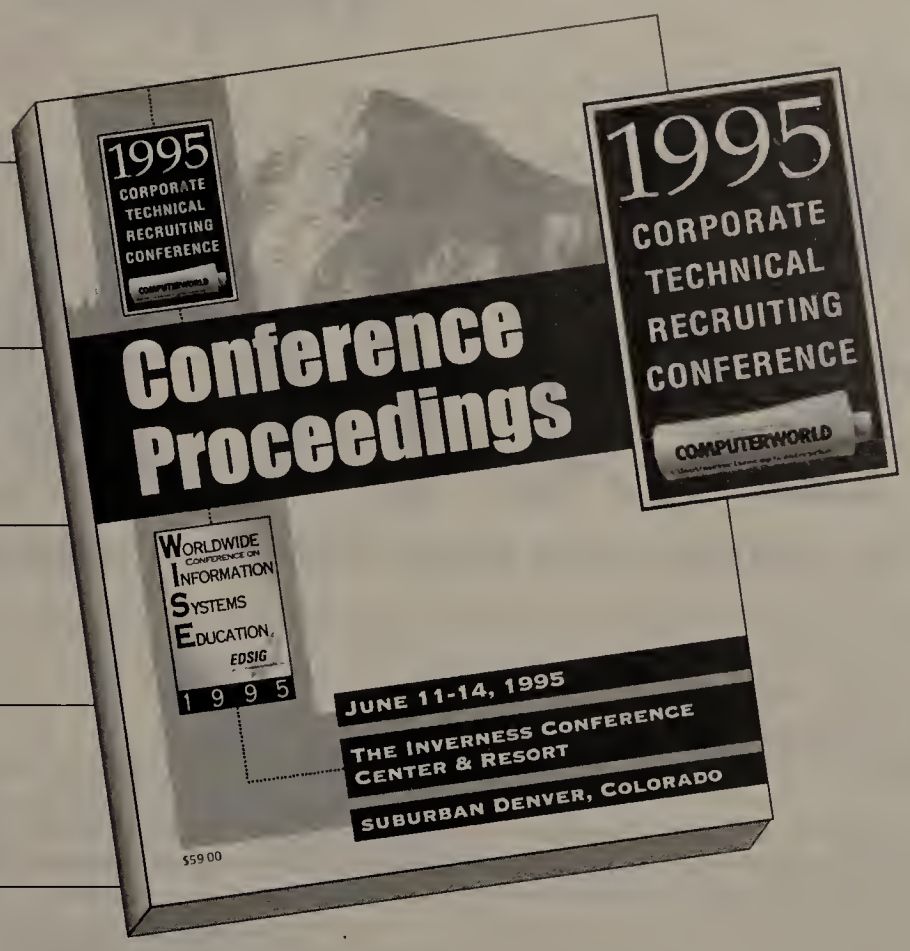
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Computer Careers

Adios!

Why do employees leave? *Managers claim rigorous recruiting is to blame, but a quest for a greater challenge is usually the reason.*

By William Spain



Folks who are capable of handling the newest gizmos are, by their own accounts, an easily distracted lot. Many are forever ready to discard an outdated employer as quickly as they would an old version of Windows.

A picture emerges of a restless subclass constantly on the prowl for new opportunities. And, fortunately for them, their need for new challenges is very nearly matched by the high likelihood of their finding them.

While each case is unique, employers and employees seem to agree that the main reason for this constant state of flux is the search for more exciting technical possibilities. Both groups also affirm that money is usually involved to some extent.

Staff view:

Kevin Taylor, 30, is one such wanderer. A recently hired sales engineer at Claris Corp., he left his last IS job at a business publishing company when a headhunter contacted him with promises of big money and opportunity. The deal that lured him away fell through, but he eventually landed on his feet at Claris. Over the years, Taylor has voluntarily left jobs because they lacked variety, had too much stress or didn't pay enough. He has also been laid off.

"Generally, I won't leave a job unless I get a really good opportunity somewhere else," he says. "For me, a better opportunity is defined by what the job entails: [What] is the company, and who will I be working for? Is the company going to put money into me?"

Taylor says, "In the computer industry, it is really easy to get stuck in a rut in network management." And the thirst for variety has prompted him to move on. He also gets tired of the stress associated with technical support.

When it comes to compensation, Taylor admits that "money is, of course, always a factor," but it has taken a backseat to other considerations. "There was a time four to five years ago when I was purely money-driven, [but now] it's not so much a money issue as a job issue. I have turned down $20 grand a year more" to work somewhere else, Taylor says.

A firm's lack of the most sophisticated equipment has also caused him to move on, he says. "Being the computer geek that I am, I like to play with the latest and greatest technology. That is always enticing," he says.

As one senior software quality assurance engineer, 37, who works for a Fortune 500 company and is more than ready to leave puts it: "The biggest reason people move on is that they get bored. Part of being in the computer culture is wanting to do new stuff all the time."

"If you don't put challenging opportunities in front of people, it is like giving an artist nothing but boring drafting assignments."
Liz Ryan,
U.S. Robotics

Frank Coleman, a 35-year-old self-described "multimedia ninja," confirms the aforementioned boredom factor. "A lot of people in our industry have varying degrees of attention deficit disorder," he says

Coleman, an independent contractor who has worked at a variety of firms, says he's "been around a whole bunch of different blocks. Part of it is that I am a restless soul — the Gypsy aspect [of moving from job to job] appeals to me."

"When I was working for other people, the longest I could ever stay at a particular job was a year. After a year, I would start getting squirrelly," Coleman says.

Manager's view:

From one manager's point of view, lifestyle needs drive more IS people to new jobs than anything else. Don Serpico, executive vice president of operations at the Chicago Mercantile Exchange, has been in information services for 30 years. He says one of the main reasons his people leave these days "is a quality of life issue."

"A generation ago, there was a certain mind-set and a certain discipline followed" regarding priorities of work and personal life. "Now, there are certain home life standards that people are really committed to," he says, and they will leave if they feel those standards are not being met.

Serpico says at one time there was a "tremendous pride" in IS work, but "you are not seeing that as much anymore. Instead, you are seeing bailouts on projects in the middle of projects."

He also attributes job turnover to the relentless recruiting of people with specialized skills. "You are finding a tremendous amount of movement due to these efforts. People are getting snatched away because of their specialized expertise. Financial institutions are losing people to a bigger variety of smaller companies [offering] very, very flexible packages," Serpico says.

Liz Ryan, vice president of human resources at Skokee-Ill.-based U.S. Robotics, says her people are "under assault by headhunters. The phones are burning up with opportunities. It is as hot as I've ever seen it."

Maintaining a vibrant technological environment is crucial to keeping your best IS workers happy, she says. "If you don't put challenging opportunities in front of people, it is like giving an artist nothing but boring drafting assignments," Ryan says.

Lisa Bond, IS director at DMB&B, an advertising agency in New York, downplays the lifestyle excuse and concentrates on more traditional reasons such as "the ability to get a jump in salary by moving." However, she quickly adds that it is not universal because she has seen a few people even take a small pay cut for a new job.

Another reason is a desire for training. With so many companies under budgetary constraints, people often must leave to seek "the new technological challenges whatever and wherever they may be. Some companies don't move as fast as others," Bond says.

At least not as fast as their employees do. ■

Spain is a freelance writer in Boston.

Most common reasons for leaving a job*

	IS staff	IS middle manager
Increased challenges/advancement	65%	57%
Better pay	46%	45%
Escape stress	36%	35%
Lack of communication with superiors	19%	18%
Base	167	194

*Top responses; multiple responses allowed

Interest level in jobs at other companies*

	IS staff	IS middle manager
Not actively looking, but if the right job came along . . .	60%	65%
Always looking	16%	7%
Currently seeking job for advancement	12%	10%
Base	173	201

*Top responses

Company's action to minimize turnover*

	IS staff	IS middle manager
Nothing	54%	50%
Competitive salary/bonus	12%	18%
Training/education	5%	11%
Base	120	145

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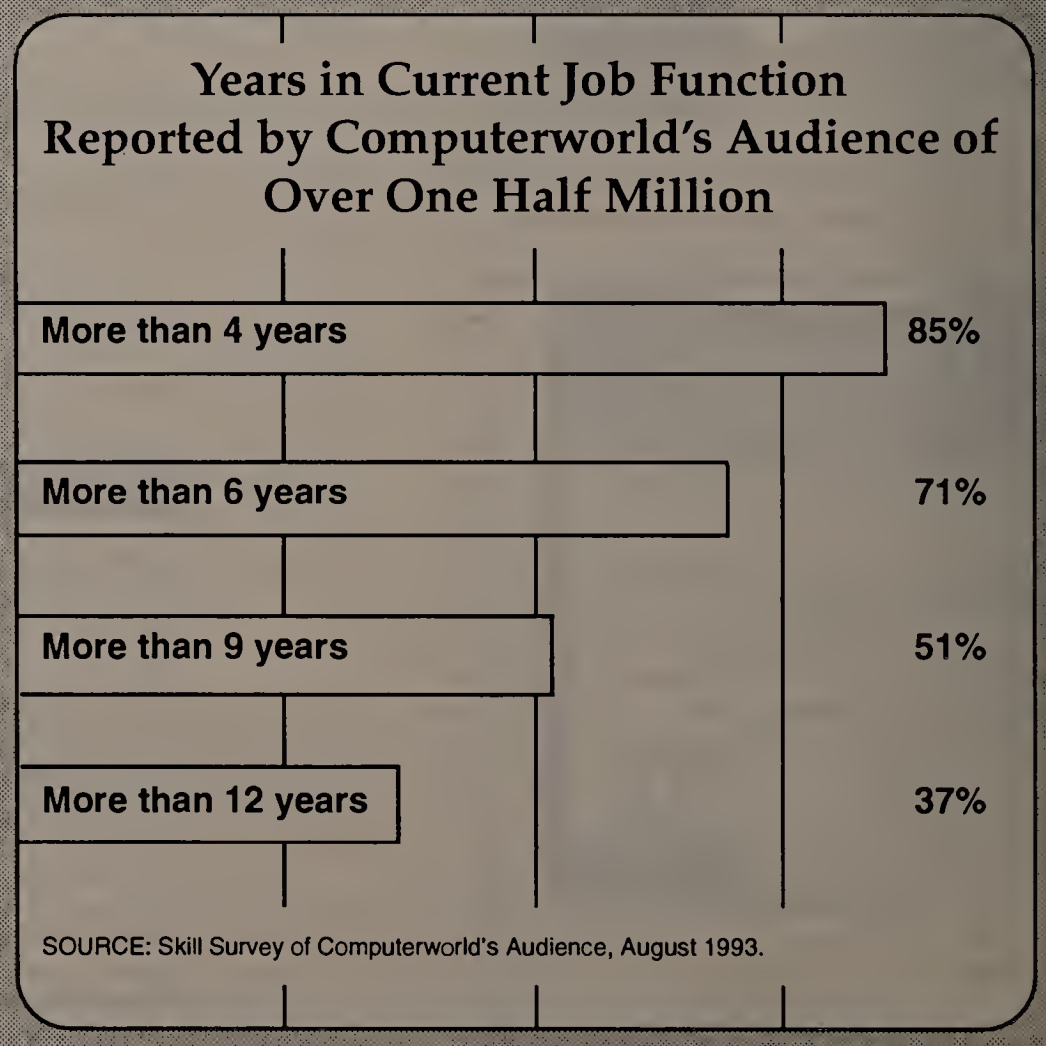
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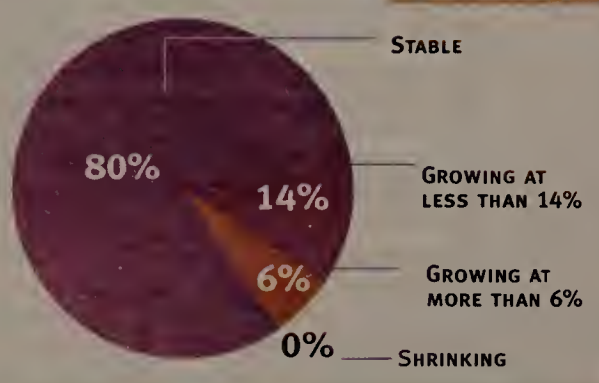
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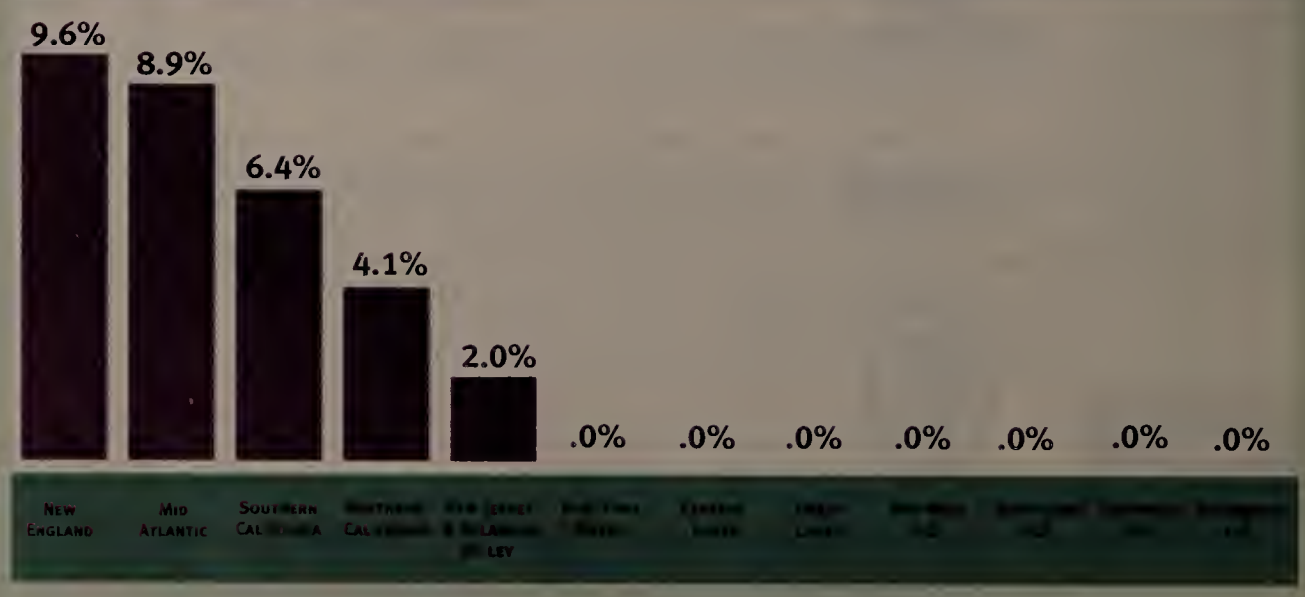


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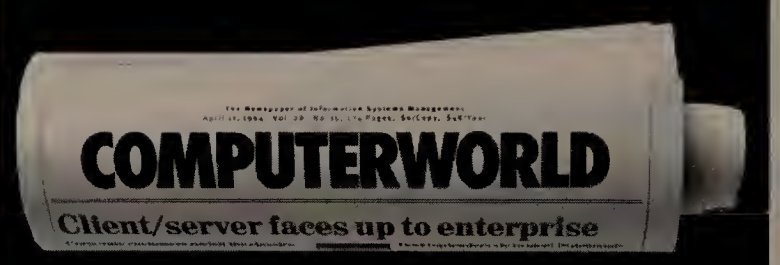
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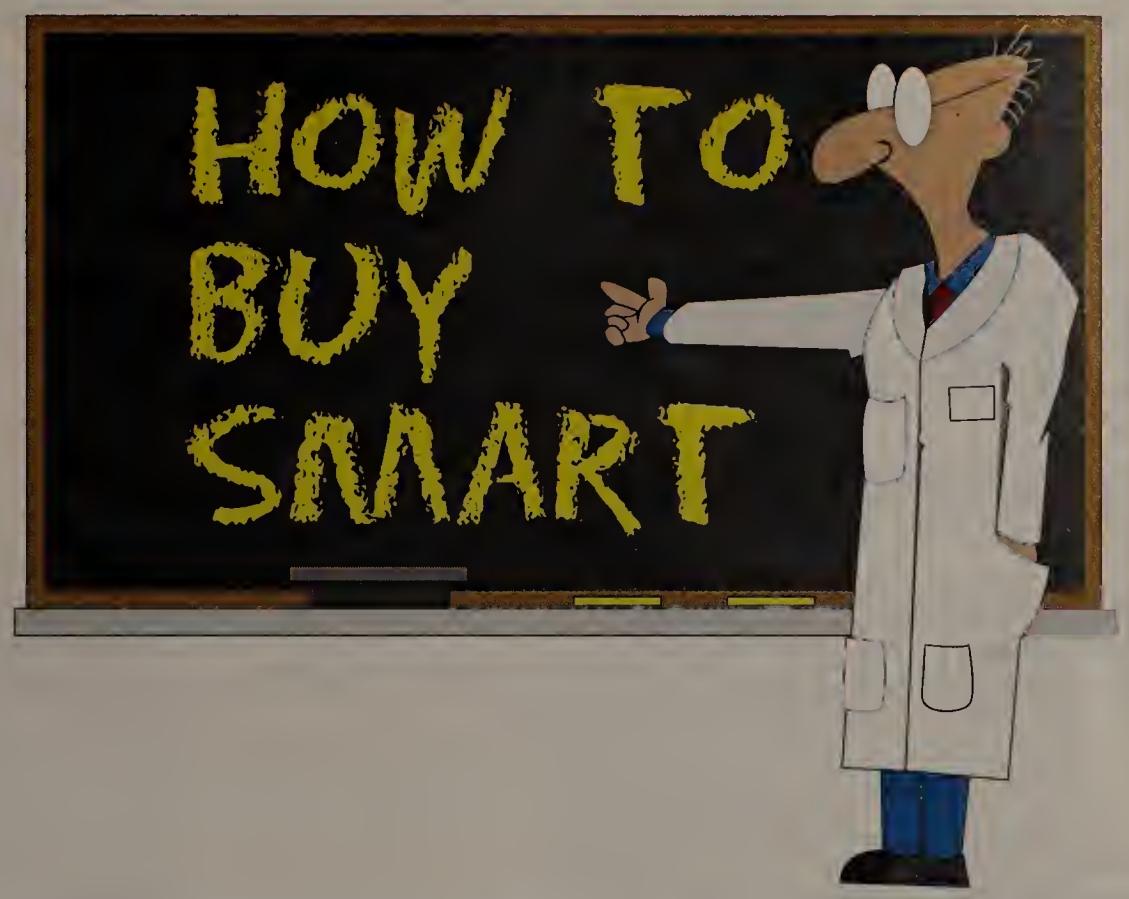


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OUTSOURCING OPTIONS FOR HELP DESKS



By Alan Radding

COMPANIES ARE TURNING over all or part of their help desk operations to a growing cadre of outsourcing vendors. Some consultants discourage this practice, and the economic advantage isn't compelling. But the trend is gaining momentum.

In a recent Help Desk Institute survey, 58% of 1,007 respondents say they outsourced some or all of their help desk operations in 1994, up from 12% in 1993. But the motivation to outsource varies.

Some experts say interest is due in large part to companies' focusing on what they do best and outsourcing functions they're not equipped to handle or can't do cost-effectively.

But money isn't always the main issue. "Cost is [not] driving this," says Char LaBounty, author of the Help Desk Institute study. (In fact, less than 10% of survey respondents calculated the cost per call of their help desk, so these respondents don't even have a basis for cost comparison.) An increase in workload is a more compelling reason to outsource, LaBounty suggests.

DOUBLE TROUBLE

Call volumes at the leading software support outsourcing vendors tracked by Dataquest Worldwide Services Group hit 1.3 million in 1994, up from 560,000 in 1993.

For example, Lutheran Social Services of Illinois in Des Plaines outsourced its remote LAN support and help desk when it began installing LANs at more than 120 sites.

"We faced the problem of ramping up a major new system without adding staff, and we didn't have the staff to do both the installation and the support," says Bret Smith, director of information systems. Since many of the remote sites required nonstandard installations, IS handled installation and outsourced support.

Unfortunately, experts predict the support problem will only get worse. "Windows 95 will require knowledge that few IS organizations have," says Peter Raulerson, president and chief exeeutive officer of ParaTechnology in Bellevue, Wash. With it, help desks will face a much more complex environment that includes multimedia, remote access, Internet connectivity and more.

Currently, only 5% of 376 companies outsourcing are turning over everything to an outside vendor, according to the survey. But with help desk outsourcing appearing on every vendor's radar screen as a hot target, a wide range of options exist.

When choosing help desk support vendors, organizations place primary importance on telephone support capabilities, staff expertise and documentation, according to Dataquest Worldwide Services Group. When purchasing support from software vendors, respondents ranked service reputation, product reputation, product features, documentation and clear value of service as the most important issues.

Yet not everyone is bullish on help desk outsourcing. "Outsourcing is expensive," says Ivy Meadors, president of High Tech High Touch Solutions, a help desk consulting firm in Seattle.

Pricing varies depending on coverage, response speed and the number of users supported. Vendors offer an array of pricing options, from per incident pricing to unlimited service. Lutheran Services, for example, pays a base price for a fixed number of workstations and a fee for each additional workstation. "You also pay about 40% more for extended support hours," Smith adds.

Because help desk outsourcing is just emerging, organizations must be careful. "Users need to think about what their needs will be tomorrow as well as today because if you dismantle your help desk, it is hard to go back," warns Bob Johnson, a director of research at Dataquest. "We've also seen a lot of vendors go out of business or merge." Caveat emptor! ■

Radding is a freelance writer in Newton, Mass.

COUNTING COSTS

85% of help desk outsourcing deals are customized. Average pricing for annual corporate contracts at the 25 leading support outsourcing vendors include the following:

STANDARD: $154 average per user; $267 per user for extended hours
PER HOUR: $147
PER MINUTE: $2 to $3
PER CALL/INCIDENT: $3

• These are average corporate prices. Volume discounts available.

Source: Dataquest Worldwide Services Group, Framingham, Mass.

AT A GLANCE

HOW MANY OUTSOURCE?

58% of 1,007 respondents surveyed by the Help Desk Institute outsource some or all of their help desk operations.

WHAT TASKS GO?

86% of 376 respondents outsource hardware support and repair; 30% outsource shrink-wrapped PC software support; 15% outsource network and LAN support.

WHO OFFERS HELP?

Dataquest identifies four categories of support outsourcing vendors:

1) small low-budget telephone-based operations
2)veteran-support outsourcing providers
3) large diversified service companies
4)major hardware vendors

MOST IMPORTANT FEATURES OF HELP DESK OUTSOURCING VENDORS

Telephone support capabilities, staff expertise and documentation

Source: Help Desk Institute, Colorado Springs, Dataquest Worldwide Services Group, Framingham, Mass.

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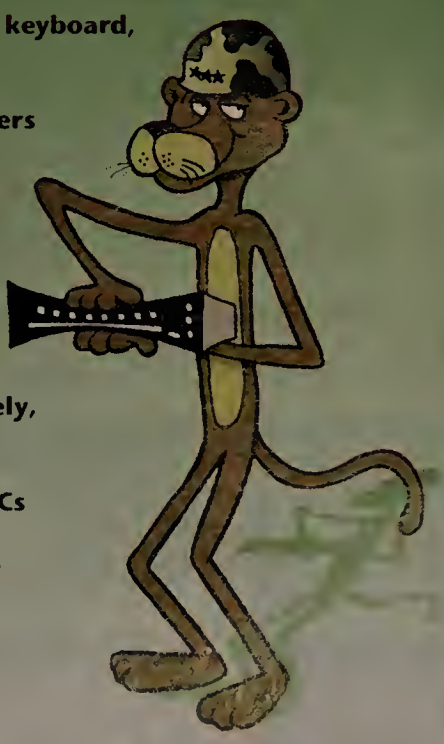
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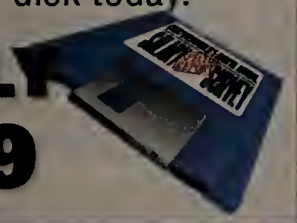
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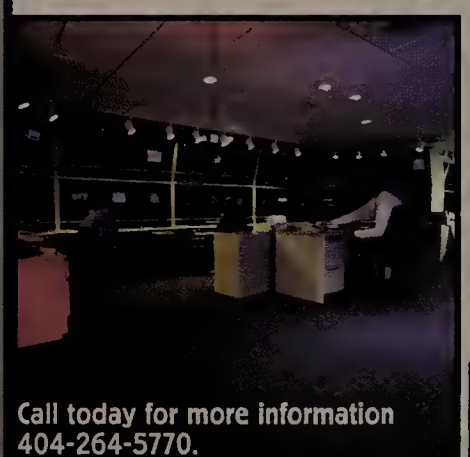
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A pre-bid meeting will be conducted by the Commission on Wednesday, August 16, 1995 at 3:00 p.m. for interested parties. Proponents are encouraged to have a representative present at this meeting, as no subsequent meetings will be arranged.

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Aug. 4 Stock Ticker

Gainers

Percent

Digital Equipment Corp.	18.0
MathSoft	17.4
System Software Assoc.	15.6
Centigram Communications	12.5
NetFrame	11.9
MICOM Communications Corp.	11.9
Merisel	11.5
Digital Equipment Corp.	11.0

Dollar

Digital Equipment Corp.	4.38
Intuit Inc.	4.25
System Software Assoc.	3.25
Comshare Inc.(H)	2.00
Centigram Communications	1.94
Southwestern Bell Corp.(H)	1.75
ITT Corp.(H)	1.38
Iomega Corp.(H)	1.38

Losers

Percent

Computer Network Tech. (H)	-30.2
Rexon Inc.(L)	-18.8
FTP Software Inc.	-17.8
Creative Technologies Inc.(L)	-16.4
Borland Int'l Inc.	-12.6
Integrated Silicon Systems	-11.9
Informix Corp.	-11.7
Microcom Inc.(H)	-11.5

Dollar

Texas Instruments (H)	-12.25
Hewlett Packard Co.	-8.25
Adobe Systems Inc.	-6.00
US Robotics(H)	-5.75
SynOpsys	-5.75
Peoplesoft(H)	-5.63
Integrated Silicon Systems	-5.50
FTP Software Inc.	-5.25

Hewlett-Packard Co.'s stock price slid after news of printer price reductions and competitive pressures. In contrast, stocks for printer rival Canon USA, Inc. rose to a year's high after it announced new high-speed printing technology.

Industry Almanac

Far from the madding crowd

Almost lost in the Wall Street din of mergers, television network purchases and a hostile takeover hoax was the quiet, friendly merger announcement by **Broderbund Software, Inc. (BROD)** and **The Learning Co. (LRNG)**.

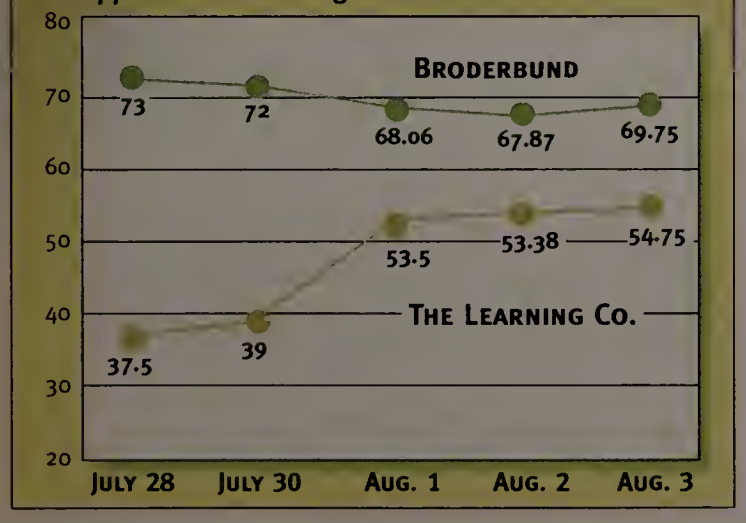
The Learning Co.'s stock bounded upward after the Fremont, Calif.-based software developer announced it would join forces with Broderbund, a Novato, Calif.-based developer of desktop publishing and educational software. This type of growth merger "makes perfect sense to both companies," said Vincent Turzo, an analyst at Jefferies and Co. in San Francisco.

"For Broderbund, the runaway success of their game products [including Myst and Carmen San Diego geography games] changed the complexion of their business so much so that entertainment products started approaching 30% of total sales," Turzo said.

Broderbund is a conservative company "that is more comfortable with the longer shelf-life personal productivity products" and the adult language education software that The Learning Co. offers, he added. The Learning Co. will use Broderbund's international market distribution expertise and the increased capital to expand into international markets. Its challenge will be to "localize internationally" by culturally and linguistically targeting their products to individual countries, Turzo said. — *Stewart Deck*

Hitting the books

The Learning Co.'s stock climbed and Broderbund's dipped after their merger announcement last week



Exch	52-Week Range			Aug. 4 3 PM	Wk Net Change	Wk Pct Change
Communications and Network Services						**OFF 2.85%**
OTC	79.00	24.63	3 COM Corp.	71.13	-3.00	-4.0
NYS	49.38	38.00	AMERITECH Corp. (H)	48.50	-0.25	-0.5
NYS	59.00	47.25	AT&T	52.00	-0.75	-1.4
OTC	74.00	8.50	Ascend Communications (H)	71.00	-1.38	-1.9
OTC	19.75	10.00	Banyan Systems Inc.	11.75	-0.25	-2.1
OTC	48.25	23.13	Bay Networks Inc.	41.94	-3.94	-8.6
NYS	58.88	48.38	Bell Atlantic Corp.	58.38	0.50	0.9
NYS	68.25	50.50	Bellsouth Corp.	67.00	-0.88	-1.3
NYS	39.38	11.25	Bolt, Beranek & Newman	36.13	-0.88	-2.4
OTC	22.25	9.00	Brooktrout Technology (H)	20.00	-0.25	-1.2
NYS	59.63	37.38	Cabletron Systems (H)	51.75	-5.13	-9.0
OTC	22.25	12.25	Centigram Communications	17.44	1.94	12.5
OTC	50.50	20.00	Chipcom Corp.	36.25	-1.38	-3.7
OTC	58.75	20.38	Cisco Systems Inc. (H)	54.25	-2.13	-3.8
OTC	12.00	6.13	Compression Labs Inc.	8.31	-1.06	-11.3
OTC	12.75	5.63	Computer Network Tech. (H)	8.81	-3.81	-30.2
OTC	14.50	7.50	CrossComm	11.19	0.44	4.1
OTC	4.50	2.13	Data Switch Corp.	4.31	0.00	0.0
OTC	55.50	22.00	DSC Communications (H)	49.13	-4.88	-9.0
OTC	42.00	14.13	FORE Systems Inc.	33.50	-3.63	-9.8
NYS	35.88	9.25	General Datacomm Inds.	12.75	-0.50	-3.8
NYS	36.38	29.50	GTE Corp.	35.75	0.00	0.0
NYS	121.88	77.00	ITT Corp. (H)	118.50	1.38	1.2
OTC	25.88	17.25	MCI Commmunications Corp.	23.50	0.44	1.9
OTC	15.75	5.50	MICOM Communications Corp.	8.25	0.88	11.9
OTC	22.25	6.25	Microcom Inc. (H)	18.69	-2.44	-11.5
OTC	10.50	4.00	Netrix Corp.	5.75	0.38	7.0
OTC	10.47	3.25	Network Computing Devices	8.88	0.13	1.4
NYS	30.75	9.75	Network Equipment Tech.	29.50	-0.63	-2.1
OTC	36.13	15.25	Network General	33.00	-1.50	-4.3
NYS	43.38	27.00	Newbridge Networks Corp.	29.50	-2.75	-8.5
NYS	41.00	31.25	Northern Telecom Ltd.	37.50	0.00	0.0
OTC	23.25	13.75	Novell Inc.	18.25	0.13	0.7
NYS	43.13	35.63	Nynex Corp.	43.13	1.13	2.7
OTC	39.25	17.75	Octel Communications Corp. (H)	36.00	-2.63	-6.8
OTC	33.00	7.88	Optical Data Systems Inc.	30.75	-1.25	-3.9
OTC	6.00	2.13	Penril Data Comm Networks	4.75	-0.25	-5.0
OTC	62.00	13.75	Picturetel Corp. (H)	56.38	-3.00	-5.1
OTC	8.13	2.13	Proteon Inc.	6.88	0.25	3.8
OTC	7.88	3.00	Racotek Inc.	5.88	-0.31	-5.1
OTC	6.75	3.50	Retix	4.00	-0.25	-5.9
NYS	24.88	17.00	Scientific Atlanta Inc.	20.25	-2.13	-9.5
NYS	49.75	39.25	Southwestern Bell Corp. (H)	49.50	1.75	3.7
NYS	40.13	25.88	Sprint Corp.	34.00	-0.38	-1.1
OTC	31.63	12.50	Standard Microsystems Corp.	17.25	-1.38	-7.4
OTC	57.50	14.38	Stratacom Inc.	50.63	-4.75	-8.6
OTC	8.13	3.63	Telebit Corp.	4.44	-0.38	-7.8
OTC	150.00	25.50	US Robotics (H)	137.75	-5.75	-4.0
NYS	44.00	29.63	US West Inc.	43.88	0.50	1.2
OTC	23.50	9.13	Xircom	10.19	0.19	1.9
OTC	33.50	8.00	Xylogics Inc.	30.38	0.13	0.4
PCs and Workstations						**OFF 3.02%**
OTC	7.63	3.63	Advanced Logic Research	7.25	0.00	0.0
OTC	50.13	32.13	Apple Computer Inc.	44.31	-1.44	-3.1
OTC	19.25	10.38	AST Research Inc.	15.13	-0.63	-4.0
NYS	52.88	30.75	Compaq Computer Corp. (H)	50.75	-0.50	-1.0
OTC	70.13	28.00	Dell Computer Corp.	67.25	0.13	0.2
OTC	30.38	13.13	Gateway 2000 Inc. (H)	28.13	-0.88	-3.0
NYS	83.75	39.50	Hewlett Packard Co.	73.00	-8.25	-10.2
OTC	20.13	2.75	Micron International Inc.	18.75	0.38	2.0
NYS	45.63	23.25	Silicon Graphics	39.88	-2.25	-5.3
OTC	51.50	22.63	Sun Microsystems Inc.	46.44	-2.56	-5.2
NYS	59.88	37.38	Tandy Corp.	57.13	-2.13	-3.6
Large Systems						**UP 1.04%**
ASE	13.63	6.50	Amdahl Corp.	9.81	-0.13	-1.3
NYS	8.88	3.63	Convex Computer	4.75	-0.38	-7.3
NYS	74.38	14.63	Cray Research Inc.	24.88	-1.25	-4.8
NYS	12.00	6.75	Data General Corp.	9.38	0.75	8.7
NYS	49.50	19.63	Digital Equipment Corp.	44.13	4.38	11.0
OTC	5.56	1.06	Encore Computer Corp.	1.56	-0.13	-7.4
OTC	18.50	9.25	Harris Computer Systems Corp.	14.13	0.63	4.6
NYS	111.75	61.88	I8M (H)	109.63	-1.25	-1.1
OTC	7.88	3.00	Meridian Data Inc.	7.38	1.13	18.0
OTC	12.25	4.25	NetFrame	5.88	0.63	11.9
OTC	22.75	13.88	Sequent Computer Sys.	21.38	-0.13	-0.6
OTC	10.00	3.13	Sequoia Systems Inc.	7.00	0.00	0.0
NYS	39.88	24.38	Stratus Computer Inc. (L)	24.38	-1.88	-7.1
NYS	19.75	12.00	Tandem Computers Inc.	12.75	0.13	1.0
OTC	7.63	3.38	TriCord Systems	3.75	-0.19	-4.8
NYS	13.63	8.25	Unisys Corp.	8.63	-0.38	-4.2
Software						**OFF 1.94%**
OTC	66.50	27.25	Adobe Systems Inc.	57.00	-6.00	-9.5
OTC	6.00	2.50	American Software Inc.	5.50	0.00	0.0
OTC	33.00	9.75	Applix Inc. (H)	27.25	-2.50	-8.4
OTC	50.25	24.63	Autodesk Inc.	45.00	-2.75	-5.8
OTC	7.88	1.75	Bachman Info. Systems	6.50	-0.38	-5.5
OTC	34.00	22.00	BGS Systems Inc.	33.00	0.50	1.5
OTC	83.25	41.00	BMC Software Inc.	74.25	-4.00	-5.1
OTC	31.25	16.88	Boole & Babbage	30.38	0.25	0.8
OTC	14.38	6.00	Borland Int'l Inc.	11.25	-1.63	-12.6
OTC	11.75	5.75	Brock Control Systems Inc.	9.25	0.13	1.4
OTC	3.75	1.78	CE Software	2.19	-0.06	-2.8
ASE	21.88	8.13	Cheyenne Software Inc.	18.50	0.00	0.0
OTC	32.63	10.50	Cognos Inc.	32.13	0.00	0.0
NYS	77.50	37.50	Computer Associates (H)	73.63	1.25	1.7
NYS	11.13	2.50	Computervision Corp.	9.88	-0.75	-7.1
OTC	49.25	21.50	Compuware Corp.	24.25	-0.50	-2.0
OTC	29.00	9.00	Comshare Inc. (H)	26.75	2.00	8.1
OTC	19.50	10.13	Corel Corp.	18.13	0.00	0.0
OTC	16.25	8.00	Dataware Technologies Inc.	13.75	0.25	1.9
OTC	46.00	17.25	Filenet Corp.	42.50	0.13	0.3
OTC	8.75	3.38	4th Dimension	7.38	0.38	5.4
OTC	33.00	10.00	Frame Technology (H)	28.75	-3.00	-9.4
OTC	35.50	12.38	FTP Software Inc.	24.25	-5.25	-17.8
OTC	26.00	7.75	Group I Software	23.00	0.13	0.5
OTC	13.88	8.25	Gupta	9.13	-0.25	-2.7
OTC	12.00	4.63	Hogan Systems Inc. (H)	11.75	0.25	2.2
OTC	53.75	24.25	Hyperion Software Corp.	48.25	-4.00	-7.7
OTC	18.63	11.25	Information Resources	13.00	0.00	0.0
OTC	32.38	9.63	Informix Corp.	27.25	-3.63	-11.7
OTC	14.38	7.38	Intergraph Corp.	11.25	-0.13	-1.1
OTC	10.63	2.75	Interleaf Inc. (H)	9.25	-0.88	-8.6
OTC	26.25	11.00	Intersolv Inc.	24.25	-0.44	-1.8
OTC	88.75	34.50	Intuit Inc.	88.75	4.25	5.0
OTC	48.25	20.75	Legent Corp. (H)	47.75	-0.06	-0.1
OTC	11.50	3.63	Magic Software Enterprises (H)	10.88	-0.13	-1.1
OTC	16.50	6.75	Manugistics Group Inc.	15.13	-0.13	-0.8
OTC	40.00	14.75	MapInfo Corp.	22.50	-1.75	-7.2
OTC	6.75	1.44	MathSoft	6.75	1.00	17.4
OTC	42.00	7.50	McAfee Associates (H)	37.75	-1.25	-3.2
OTC	19.88	9.38	Mentor Graphics	18.63	0.13	0.7
OTC	16.53	10.75	Micro Focus	11.88	0.13	1.1
OTC	9.75	4.75	Micrografx Inc. (H)	8.94	-0.56	-5.9
OTC	109.25	52.00	Microsoft Corp.	92.50	1.25	-1.3
OTC	22.50	6.88	NetManage Inc.	17.88	-0.50	-2.7
OTC	44.00	24.38	Oracle Corp. (H)	40.38	2.00	-4.7
OTC	58.13	24.00	Parametric Technology (H)	57.50	0.88	1.5
OTC	24.25	7.88	ParcPlace Systems Inc.	10.00	0.06	0.6
OTC	76.50	16.88	Peoplesoft (H)	65.63	-5.63	-7.9
OTC	12.88	4.75	Phoenix Technologies	11.00	-0.13	-1.1
OTC	16.88	5.50	Platinum Software	15.00	-0.50	-3.2
OTC	25.25	13.50	Platinum Technology	23.75	-1.00	-4.0
OTC	59.50	29.50	Progress Software Corp.	53.00	-4.63	-8.0
OTC	16.13	1.94	Quarterdeck Corp. (H)	15.00	-0.31	-2.0
OTC	26.75	10.13	Rainbow Technologies Inc.	22.75	-2.00	-8.1
OTC	8.00	2.00	Rasterops	7.75	0.25	3.3
OTC	7.00	3.00	Ross Systems (H)	6.25	-0.13	-2.0
OTC	47.25	12.00	Softkey International Inc. (H)	42.75	-3.50	-7.6
OTC	6.25	2.88	Software Publishing Corp.	3.25	-0.13	-3.7
OTC	12.50	5.25	State of the Art	7.88	-0.13	-1.6
NYS	42.13	25.00	Sterling Software Inc. (H)	40.63	-1.13	-2.7
OTC	15.00	4.63	Struct. Dynamics Research	12.94	0.63	5.1
OTC	55.00	19.88	Sybase Inc.	34.88	1.13	3.3
OTC	30.00	11.13	Symantec Corp.	26.94	-0.13	-0.5
OTC	67.25	36.00	SynOpsys	59.75	-5.75	-8.8
OTC	30.00	10.63	System Software Assoc.	24.13	3.25	15.6
OTC	18.13	5.50	Systemsoft Corp.	16.75	-0.13	-0.7
OTC	8.13	3.25	Trinzic Corp. (H)	7.88	-0.19	-2.3
OTC	24.00	7.88	ViewLogic Systems	13.00	0.06	0.5
OTC	22.00	10.75	VMark Software Inc.	14.63	-0.38	-2.5
OTC	10.75	4.63	Walker Interactive Systems	6.88	0.00	0.0
OTC	55.50	15.00	Wall Data Inc.	19.00	0.13	0.7
OTC	19.50	9.13	Wang Laboratories Inc. (H)	17.88	-0.88	-4.7
Semiconductors						**OFF 5.59%**
NYS	67.50	22.25	Advanced Micro Devices	32.00	-1.38	-4.1
NYS	37.88	18.13	Analog Devices Inc.	33.63	-2.25	-6.3
OTC	70.13	21.88	Atmel Corp. (H)	64.38	-4.13	-6.0
OTC	15.50	3.63	Chips and Technologies (H)	13.63	-0.63	-4.4
OTC	48.50	10.50	Cirrus Logic (H)	44.00	-2.25	-4.9
NYS	55.25	15.00	Cypress Semiconductor Corp.	48.50	-5.00	-9.3
NYS	222.00	13.38	Dallas Semiconductor (H)	22.63	0.63	2.8
OTC	48.50	20.00	Integrated Silicon Systems	40.75	-5.50	-11.9
OTC	78.38	28.38	Intel Corp.	62.38	-4.88	-7.2
NYS	49.88	13.75	LSI Logic Corp. (H)	44.25	-3.63	-7.6
OTC	43.00	15.50	Lattice Semiconductor	37.63	-2.25	-5.6
NYS	64.75	15.25	Micron Technology	58.25	-5.13	-8.1
NYS	80.13	49.00	Motorola Inc.	75.13	-2.88	-3.7
NYS	31.25	14.38	National Semiconductor	25.13	-2.63	-9.5
OTC	46.13	8.75	Sierra Semiconductor (H)	43.00	-0.69	-1.6
NYS	159.75	63.38	Texas Instruments (H)	145.75	-12.25	-7.8
OTC	33.63	10.25	VLSI Technology	28.50	-1.75	-5.8
OTC	5.25	1.78	Weitek	4.25	-0.13	-2.9
ASE	21.75	13.13	Western Digital Corp.	18.75	-0.13	-0.7
OTC	127.13	33.75	Xilinx (H)	116.88	-3.88	-3.2
OTC	54.13	37.38	Zilog Inc.	43.00	-4.63	-9.7
Peripherals and Subsystems						**OFF 3.15%**
OTC	25.88	14.38	American Power Conversion	16.63	-1.38	-7.6
OTC	44.63	17.25	Adaptec Inc. (H)	42.25	-0.13	-0.3
OTC	27.25	14.75	Banctec Inc.	17.13	-0.50	-2.8
OTC	13.13	3.38	Cambex Corp. (H)	12.38	0.25	2.1
ASE	5.63	1.38	Cognitronics Corp. (H)	4.50	-0.31	-6.5
NYS	14.63	9.00	Conner Peripherals	13.13	-0.63	-4.5
OTC	21.50	5.88	Creative Technologies Inc. (L)	7.00	-1.38	-16.4
OTC	13.13	3.50	Data Race Inc.	10.63	-0.88	-7.6
ASE	7.75	4.25	Dataram Corp.	7.50	0.25	3.4
NYS	27.38	14.00	EMC Corp.	20.75	-2.38	-10.3
OTC	28.50	7.00	Emulex Corp.	26.38	0.38	1.4
OTC	18.50	11.25	Evans & Sutherland (H)	16.50	-0.75	-4.3
OTC	24.00	11.75	Exabyte	14.88	-0.63	-4.0
OTC	4.75	1.88	Intelligent Info. Systems	3.50	0.13	3.7
OTC	30.00	2.31	Iomega Corp. (H)	27.38	1.38	5.3
OTC	7.88	2.00	IPL Systems Inc. (H)	6.75	-0.50	-6.9
OTC	69.63	20.00	Komag Inc. (H)	66.25	-0.75	-1.1
OTC	7.25	2.63	Maxtor Corp.	4.63	0.19	4.2
OTC	11.50	4.00	Micropolis Corp.	6.56	-0.19	-2.8
OTC	19.50	8.75	Pinnacle Micro Inc. (H)	16.75	-0.50	-2.9
OTC	38.75	8.88	Printronix Inc.	31.25	0.75	2.5
NYS	10.75	4.00	QMS Inc.	4.63	0.13	2.8
OTC	27.63	13.75	Quantum Corp. (H)	25.25	-1.31	-4.9
OTC	15.00	7.38	Radius Inc.	9.38	-0.38	-3.8
NYS	10.38	6.38	Recognition International	10.00	0.13	1.3
OTC	7.00	3.00	Rexon Inc. (L)	3.25	-0.75	-18.8
OTC	46.00	22.88	Seagate Technology (H)	42.88	-2.38	-5.2
NYS	39.13	17.88	Storage Technology	24.88	-1.75	-6.6
NYS	52.38	30.13	Tektronix Inc.	46.88	-1.75	-3.6
NYS	125.88	90.63	Xerox Corp.	119.00	0.13	0.1
Services						**OFF 0.89%**
OTC	27.00	14.38	American Mgmt. Systems	24.75	0.00	0.0
NYS	3.38	0.56	Anacomp Inc.	0.88	0.06	7.7
OTC	28.00	14.50	Analysts Int'l	26.88	-0.63	-2.3
NYS	66.00	36.75	Auto Data Processing	64.75	0.13	0.2
OTC	36.25	14.00	Cambridge Tech. Partners	34.00	0.88	2.6
NYS	43.50	23.50	Ceridian Corp. (H)	40.88	-0.13	-0.3
NYS	32.50	19.38	Comdisco Inc.	31.88	0.38	1.2
OTC	21.00	6.63	Computer Horizons (H)	20.00	0.38	1.9
NYS	61.50	40.00	Computer Sciences (H)	57.63	-1.63	-2.7
NYS	16.00	7.50	Computer Task Group	14.50	-0.25	-1.7
NYS	36.00	6.75	CompUSA Inc.	33.50	-1.13	-3.2
OTC	10.75	5.38	Control Data Systems Inc.	9.06	-0.56	-5.8
OTC	14.25	6.25	Egghead Discount Software	11.75	-1.38	-10.5
NYS	46.25	34.75	General Motors E (EDS)	43.75	-0.13	-0.3
OTC	15.25	6.88	Inacom Corp.	13.50	-0.38	-2.7
OTC	18.13	7.50	Intelligent Electronics	13.00	0.00	0.0
OTC	11.25	3.88	Merisel	7.25	0.75	11.5
OTC	15.88	8.50	Microage Inc.	12.88	-0.88	-6.4
OTC	40.00	21.13	Paychex	37.50	-0.25	-0.7
NYS	53.88	32.63	Policy Management Sys. (H)	52.25	0.75	1.5
NYS	33.50	22.25	Reynolds and Reynolds	30.63	-0.63	-2.0
OTC	24.50	16.75	SEI Corp.	21.50	-0.63	-2.8
OTC	42.75	23.13	Shared Medical Systems	40.25	-1.50	3.6
OTC	8.13	4.00	SHL Systemhouse (H)	7.44	-0 50	-6 3
OTC	26.50	12.00	Software Spectrum Inc.	24.50	-0.25	-1.0
OTC	31.75	16.38	Sungard Data Systems	30.00	0.75	2.6

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Stability and compatibility top Win 95 user issues

Training and networking secondary concerns

By Cheryl Gerber

Corporate users bracing for the move to Microsoft Corp.'s Windows 95 are concerned chiefly with stability and compatibility, with a lesser focus on cost and networking.

"Our greatest concern is stability. We want to be sure the bugs are worked out and [that] there's no danger of system crashes," said David Bernauer, chief information officer of Walgreen Co. in Deerfield, Ill.

Compatibility between the 16- and 32-bit environment is also a salient concern, Bernauer and others said. The long file names in Windows 95 don't integrate with the short file names of Windows 3.1 files.

"If I save a long file name on a networked drive that contains the 16-bit version of the application, then that user will see a shortened, cryptic version of the long file name. In the mixed 16- and 32-bit application environment, it's hard for people to decipher file names," said Enrique Salem, general manager of Symantec Corp.'s Norton Utilities division who is beta-testing Windows 95.

Compatibility is also a big concern at AgCo Services Corp. in Norcross, Ga., the data center for a large agricultural financial services company. "Sending incompatible documents back and forth between offices will be a problem. There's no backward converter yet for [Microsoft's] new 32-bit PowerPoint, for example," said Perry Mittler, network planner at AgCo.

Mittler has been preoccupied with printer driver migration. "We know we'll have printer driver incompatibility between Windows 95 and the 32-bit version of Word. We're running the 32-bit Word on NT now, and we've had problems," he said.

Of lesser importance

The high costs of maintaining a help desk and concerns about networking compatibility have been relegated to secondary issues because the Windows 95 architecture addresses some of those concerns. Analysts say cost concerns have been partially assuaged by the fact that Windows 95's registry and systems management features help with cost justification. And the built-in TCP/IP protocol stack eases concerns about a lack of standard networking.

"If I can reduce 40% of my technical calls through the functionality delivered in the operating system, it's immediately cost justifiable," said John Dunkle, a consultant at Workgroup Strategic Services, Inc. in Portsmouth, N.H.

Added stress

Top user concerns about migrating to Windows 95

1	Bugs
2	Stability
3	Hardware issues
4	Compatibility
5	Availability

Source: International Data Corp., Framingham, Mass.

Training is a concern, however. At financial services giant Merrill Lynch & Co. in New York, "the time and cost of training is a big issue right now. The user interface of Windows 95 is different from Windows 3.1," said a brokerage executive who requested anonymity.

Developers also foresee a steep learning curve with regard to the different interface. "Windows 95 uses four levels of cascading menus for launching programs vs. just using Windows that contain program icons in Windows 3.1," Salem said.

Stability tops

It is stability, however, that has been the top concern among corporate Microsoft users for the past year, according to surveys on Windows 95 migration issues completed last year and this year by International Data Corp. (IDC) in Framingham, Mass.

"One year ago, the reservations users had about [Windows 95] were reliability and bugs. In the intervening year, that remains their chief concern, and it contributes to their reluctance to upgrade to Windows 95 immediately after it ships," said Mary Conti Loffredo, an analyst at IDC who recently completed the survey.

What price Win 95?

CONTINUED FROM PAGE 1

8M bytes of RAM and a 24M- to 48M-byte hard disk to load the operating system. Giving the 486 the nod, survey respondents overwhelmingly said they will recommend a 300M- to 799M- byte hard disk and 8M to 16M bytes of RAM.

Companies also vary in how they figure costs. In addition to hardware and software expenses, some include installation, training and support as well as completely unrelated costs such as network changes.

How much time do you plan to spend per machine to install Windows 95?*

Less than 1 hour	20%
1 to 2 hours	34%
2 to 3 hours	11%
3 to 4 hours	11%
4 to 5 hours	7%
More than 5 hours	4%
Don't know	12%
Not planning to install Windows 95	1%

* Including hardware upgrades but excluding training

Base: 100 Windows 95 users

Source: *Computerworld* survey

"We have a generic number of about $600" based on several trial cases, said Jim Lisiak, senior software engineer at Chevron Information Technology Co. in San Ramon, Calif. That figure includes "hardware, software, installation time, training and support [costs]," he said.

"[Our] preliminary spreadsheet [estimates] about $2,000 per machine," said John Thompson, systems manager in the resource group at the Tennessee Valley Authority's Chattanooga facility. The TVA's estimates include about $500 per user for training. And while the average PC at the TVA is a 486-based machine with 16M bytes of RAM and a 500M-byte hard drive, the estimate also includes the cost of installing a Microsoft Windows NT-based network.

"We've been running with an estimate of $500" per machine to upgrade the hardware and software based on early adopter companies likely to have mostly PCs that are less than 2 years old, said Rob Enderle, a senior industry analyst at Dataquest, Inc. in San Jose, Calif.

However, it may be difficult to account for the cost of upgrading to Windows 95 because its release is likely to be the catalyst for an overall performance upgrade, said Chris Le Tocq, principal analyst at SoftTracks Software Research in Los Altos, Calif.

Training is another area where costs are hard to quantify, although 65% of respondents in the *Computerworld* survey said they plan to provide users with less than three hours of Windows 95 training. Still, IS expectations vary dramatically.

"In an hour, you can show people all they need to know to go from Windows 3.1 and Office 4.0 to Windows 95 and Office 95," said Briscoe Stephens, a coordinator for space sciences at NASA in Huntsville, Ala.

In contrast, Don Barker, associate professor of information sciences at Gonzaga University in Spokane, Wash., said he doesn't plan to provide any training other than interactive CD-ROM-based training tools and tutorials.

On the opposite end of the scale, Lisiak said that while Chevron end users will initially receive an hour of training, the company will provide follow-on training for users depending on specific needs.

Alternatives surface for Windows 95 support. See page 39.

AT&T opens up

CONTINUED FROM PAGE 1

ers more capacity for remote LAN access than dial-up lines.

But user-to-user signaling will enable PRI, AT&T's ISDN service, to be used by midsize and large sites to more efficiently support remote access. That will win accolades in the data market for the younger, less-ballyhooed PRI.

"That's a great capability that we could definitely use," said Dave Meyer, a senior network engineer at the University of Oregon in Eugene. "We'd love to move authentication for remote access over to the D [signaling] because our users are pounding on our B channels. We need as many of them as we can get."

A PRI would let 23 workers dial in to a LAN at a midsize or large site at the same time; a BRI would let only two workers do the same thing.

While BRI lines have two 64K bit/sec. B channels and one 16K bit/sec. D signaling channel, PRI lines — which analysts say are selling like hotcakes — have 23 64K bit/sec. B channels and one 64K bit/sec. D signaling channel.

More savings

The extra 64K bit/sec. will also help users better support high-bandwidth applications. Shifting functions from a channel that is billed per minute, such as a phone call, to the less expensive, kilopacket-priced signaling channel will also save users money.

To employ user-to-user signaling, the masses of users with T1 lines, which cost about $410 per month, will need to spend roughly $400 more a month for a PRI line. The extra $400 buys the signaling channel, which users can't get with T1 lines.

"The $400 charge for a PRI is a minimal one when you start to consider the added functionality that users will be able to get with the signaling channel," said Mark Langner, a senior analyst at TeleCoice, Inc. in Verona, N.J. Meyer agreed.

AT&T is expected to use a flat-rate charge to a certain level, beyond which users would pay a usage-based charge. It didn't have specific pricing last week.

Langner speculated AT&T will employ user-to-user signaling as part of a multimonth controlled introduction with many users, followed by nationwide availability.

Keeping ahead of the pack

Offering the new capabilities for ISDN PRI would help AT&T — which analysts estimate has 90% of the PRI market — keep that huge market lead over rivals MCI Communications Corp., Sprint Corp. and WilTel.

Langner said the explosion of user interest in remote LAN access and LAN-to-LAN access has fueled the development of the new network-based capabilities.

"[User-to-user signaling] is just the beginning of AT&T's plans to expand the role of PRI far beyond the voice features it supports today," Langner said. "Network managers need to start looking at moving from T1 to PRI to gain capacity and to use future features."

Router vendors such as Cisco Systems, Inc. have laid the foundation for user-to-user signaling by providing PRI interfaces for their routers. Vendors will need to add minimal code to router software to support the new offerings.

Analysts say other national carriers have the basic ability to support user-to-user signaling from their nationwide networks but lag AT&T in bringing their implementations of the technology to market.

NT suddenly looks better in the daylight of Win 95

You don't have to be a genius to sense the wave of second thoughts sweeping the user community as Microsoft prepares to launch Windows 95.

Should we delay our conversion? Will our applications be available when we need them? If it's coming out on time, how stable will it be? These are some of the questions PC managers and information systems directors are asking themselves.

Microsoft Chairman Bill Gates recently told Wall Street analysts that he sees only two more versions of Windows before it merges with Windows NT. His comment raises the question, "If we are going to end up with Windows NT anyway, why don't we just move there now?"

The Meta View



If we are going to end up with Windows NT anyway, why don't we just move there now?

Charles Babcock

The prospect of migrating to NT is a difficult one. It is an inherently more complex, server-oriented operating system with many properties that end users don't need. It was designed to merge the best features of Unix and Digital's VMS around a hardware-independent microkernel. Until now, I didn't view NT as an end-user operating system, but desktop hardware and networking needs are catching up to it.

NT's software and hardware requirements are only a short jump ahead of what you are buying for Win 95. If you have been buying PCs with 8M to 12M bytes of memory to prepare for Win 95, then you need only move to 16M bytes to prepare for Windows NT.

The diminishing gap between the two operating systems has one manager saying "no" to Win 95 and "next year" to NT. Vince Chrisman, MIS director at Sandy Corp., a specialized training firm in Troy, Mich., says he is buying only Pentium-based PCs equipped with 16M bytes of memory for his 250 users. But he has no plans to convert them to Win 95. In a year, he estimates, he'll move straight to NT.

In a test-drive, Chrisman found that his 32-bit version of Microsoft's own Schedule Plus is not backward-compatible with his current Schedule Plus on Windows for Workgroups. If he converts some users to Win 95, they will be able to read and update other Win 95 user calendars but not those back in the world of Windows 3.11. Chrisman says he worries that the same conflict between 16- and 32-bit applications may crop up for other Win 95 packages, so he plans to convert everyone to NT at the same time.

And while the Win 95 operating system is inexpensive, buying new applications for everyone begins to add up. "Windows 95 is the 'new' Coke," Chrisman says. Why not just move to NT instead? he asks.

Apparently he isn't alone. *Computerworld* surveyed 100 IS managers and found that 79% plan to move to Win 95, although only 29% said they would migrate in its first six months. And 35% said it was very likely or somewhat likely that they would skip Win 95 and move to NT. These responses were collected before Gates confirmed to Wall Street that Windows would soon merge into NT. As they ponder that statement, some managers are going to reconsider their need for Win 95.

IS managers also might want to consider the following:

Security. NT offers C2-level security, which allows the owner of a database, file or other resource to decide which users can access it and what those users can do with it. NT also keeps an auditor's account of security-related events, including identification of who attempts to access or delete system resources. Wall Street firms have been among the early converts to NT from Unix, partly because of its security features. Win 95 does not offer C2 options.

Multithreading. Ambitious users want to do more than one task at a time, which they can do under Windows 3.11 or Win 95. But Windows NT is a multithreaded, multitasking system that can take advantage of more than one CPU. This feature is useful to investment advisers or customer information workers conducting complex queries against large databases.

So the next six months are likely to reveal a pronounced shift toward NT. If you don't want to move all of your end users, it might make sense to consider those at company headquarters, in a trading room or on a customer information system. They will benefit most from NT's multithreading and security.

Babcock is *Computerworld*'s technical editor. His Internet address is cbabcock@cw.com.

Inside Lines

Never let facts get in the way of a good plot

The new Internet-run-amok film *The Net*, starring Sandra Bullock as 'nethead Angela Bennett, is full of exaggerations and oversimplifications in its depictions of hackers, according to Jon Singleton, president of the Information Systems Audit and Control Association. "The idea that one software program [the fictional Gatekeeper] could instantaneously hack into any computer system is pure fantasy," Singleton said. Also, the "characters in this movie were far more adept at linking government sources than the government is," he pointed out. Ouch.

Making it personal

Digital is planning to unveil a "personal workstation" next month that will run on either Intel or Alpha microprocessors — and even switch from one to the other. David Flawn, marketing director at Digital's Windows NT unit, said, "You can buy it as an Intel machine and then upgrade it to an Alpha later" by installing a new card.

The Sun sets on Islandia

Computer Associates continues to tighten the integration between its CA-Unicenter systems management package and other leading network management products. This week, CA and Sun Microsystems will announce plans to join CA-Unicenter and SunNet Manager into a single, integrated product. Sources said the plans, which extend well beyond the limited connectivity the systems share, are akin to the integration project CA and Hewlett-Packard unveiled several months ago.

Everybody share, now!

Collabra Software in Mountain View, Calif., is working on Release 3.0 of Collabra Share, its information sharing product that competes on the low end with Notes. The company will focus primarily on two areas: the Internet and Microsoft's Messaging Application Programming Interface (MAPI) 1.0. Share 3.0 will support Multipurpose Internet Mail Extensions on the Internet. It will also provide stronger support for MAPI 1.0, which will ship with Windows 95, and de-emphasize Vendor Independent Messaging and Common Messaging Call APIs.

'Basic'-ally panicked?

Are those beads of sweat forming on the brows of Microsoft's normally cucumber-cool Visual Basic product team? Beta users have grumbled that the much-awaited major new release of Visual Basic might not be such hot stuff after all, especially when compared with rival Borland's scorching Delphi tool. And now the folks behind the 32-bit Visual Basic 4.0 — which was originally scheduled for a mid-September announcement — have decided to march right into the lion's den. They will brief the press this week at, of all places, the Borland developers conference in San Diego.

Novell flirts with Windows NT

While Novell isn't saying anything officially, the Provo, Utah, company appears to be moving closer to granting users' wishes that it port its NetWare Directory Services (NDS) to Microsoft's Windows NT Server platform. "We're taking a close look at what other platforms NDS must run on, including Windows NT Server," said Toby Corey, Novell's vice president of marketing. Microsoft isn't expected to have a full-blown enterprise directory services until the Cairo release of NT Server, due in mid-1996.

No doubt in hopes of making us all forget last week's brouhaha over the desktop future of OS/2, IBM hits the road this week with a side-by-side comparison — completely unbiased, we're sure — of OS/2 Warp and Microsoft's upcoming Windows 95. The ever-clever IBM marketeers are calling it the "Prepare to Compare" tour. News of IBM's plan prompted one waggish analyst to mention a clear advantage Warp holds over Windows 95. "Many fewer applications to crash," he said. If the sound of crashing apps is keeping you up at night, why not spend a few minutes getting in touch with Computerworld *about news items or tips. You can call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at mjohnson@cw.com.*

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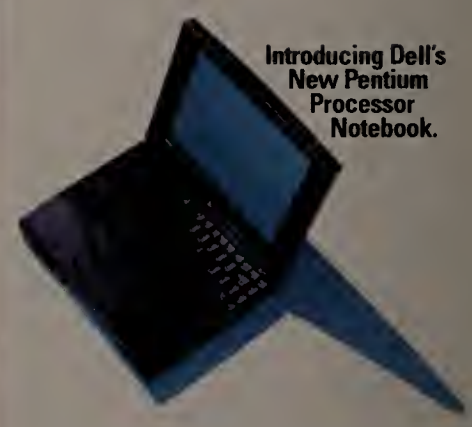
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